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# BRITISH MEDICAL JOURNAL

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 15 1945

# THE PROPOSED NATIONAL HEALTH SERVICE

## FUNDAMENTAL PRINCIPLES OF THE MEDICAL PROFESSION

*The principles set out below were drawn up and agreed upon last week by the Negotiating Committee. This committee is composed of representatives of the British Medical Association, the Royal College of Physicians of London, the Royal College of Surgeons of England, the Royal College of Obstetricians and Gynaecologists, the Royal Scottish Medical Corporations, the Society of Medical Officers of Health, and the Medical Women's Federation. The Negotiating Committee is therefore truly representative of the medical profession and speaks on behalf of all medical men and women in this country.*

*All Government proposals for a National Health Service should be looked upon in terms of these principles, and when the principles are infringed in any one particular the medical profession should be able to unite itself in opposition. So long as none of these principles is infringed then the profession should find no difficulty in co-operating with the Government in working out the administration of a National Health Service.*

For a quarter of a century the medical profession has stressed the need for a complete health service.

The profession is willing and anxious to co-operate with the Government in evolving this service, for it believes that the knowledge and experience of the profession are indispensable contributions to its success.

It re-emphasizes that good housing and social, economic, and environmental circumstances are the principal factors in the maintenance of health and the prevention of disease. It urges the expansion of medical research.

In the interests both of the public and of medicine the profession regards the acceptance of the following principles as essential:

I. The medical profession is, in the public interest, opposed to any form of service which leads directly or indirectly to the profession as a whole becoming full-time salaried servants of the State or local authorities.

II. The medical profession should remain free to exercise the art and science of medicine according to its traditions, standards, and knowledge, the individual doctor retaining full responsibility for the care of the patient, and freedom of judgment, action, speech, and publication, without interference in his professional work.

III. The citizen should be free to choose or change his or her family doctor, to choose, in consultation with his family doctor, the hospital at which he should be treated, and free to decide whether he avails himself of the public service or obtains independently the medical service he needs.

IV. Doctors should, like other workers, be free to choose the form, place, and type of work they prefer without Governmental or other direction.

V. Every registered medical practitioner should be entitled as a right to participate in the public service.

VI. The hospital service should be planned over natural hospital areas centred on universities in order that these centres of education and research may influence the whole service.

VII. There should be adequate representation of the medical profession on all administrative bodies associated with the new service in order that doctors may make their contribution to the efficiency of the service.

## STATEMENT BY MINISTER OF HEALTH

### COMPENSATION IN RESPECT OF MEDICAL PRACTICES

*The following statement was made by the Minister of Health in the House of Commons on Thursday, December 6, 1945:*

"The Government have not yet finally decided upon the proposals which they will be submitting to Parliament for a National Health Service.

"They believe, however, that it will be incompatible with the provision of an efficient service that the future exchange of medical practices and the creation of new practices within that service should be left entirely unregulated and that no effective steps should be taken to secure a proper distribution of doctors to fit the public need.

"I appreciate that intervention in this field, in whatever form it may take, will probably have the effect of preventing the sale and purchase of the practices of doctors taking part in the new service, and the Government therefore think it right to give warning of this probability at once and in advance of the formulation of their full proposals.

"At the same time and in order to allay the natural anxieties of doctors already in practice, or coming into practice from the Forces or elsewhere, the Government wish to make it clear that there will be an appropriate measure of compensation to doctors in respect of loss of capital values directly caused by the new arrangements.

"It is intended that discussion should be undertaken immediately with the profession's representatives with regard to the steps to be taken to give effect to this decision."

## STATEMENT BY SECRETARY OF NEGOTIATING COMMITTEE

*The Secretary of the Negotiating Committee of the medical profession, Dr. Charles Hill, made the following comment on the Government statement:*

The Government's undertaking to pay compensation for any loss of capital values incurred by doctors as a result of its new proposals—whatever they may turn out to be—is plain justice. The capital represented by a doctor's practice is something which he has paid for or built up and something which he relies upon for his retirement years. Any Government which takes steps to destroy or diminish a capital asset should compensate for the loss it causes, and this Government's desire to relieve anxiety on this point of principle is appreciated.

When a practice changes hands what is in fact transferred is goodwill, the patients themselves being free to accept the incoming doctor or choose another doctor as they please. Many will not share the Government's view that an efficient medical service can be secured *only* by such a fundamental change in existing arrangements. This has yet to be argued. The Negotiating Committee representing the medical profession has not yet had an opportunity of putting forward to this Government its own proposals for a complete health service, including those for a wider distribution of doctors.

The abolition of goodwill cannot be considered in isolation. What matters most is what machinery the Government proposes to substitute for the present arrangements in order to facilitate the entrance of doctors into medical practice and their freedom of movement thereafter. If, for example, it is proposed to substitute for existing arrangements a system of *posting* or *direction*, the medical profession will be opposed to it. If the Government assumes that by destroying the goodwill of existing practices it thereafter becomes entitled to appoint doctors to practices, directing them where and how and with what colleagues they shall practise, the proposal is fraught with danger to public and professional freedom. Doctors should, like other workers, be free to choose the form, place, and type of work they prefer without Governmental or other direction.

For these reasons the attitude of the medical profession to any proposal to abolish the sale and purchase of practices can be determined only when it is known what is to be substituted for the existing arrangements. To promise compensation if capital values are affected by the new arrangement is only fair and just. But whether it is necessary to introduce such new arrangements, and whether such arrangements involve the loss of the essential freedoms of the public and the profession, can be judged only when all the cards are on the table.

## LIVERPOOL SCHOOL OF TROPICAL MEDICINE

The forty-sixth report of the Liverpool School of Tropical Medicine states that Lieut.-Col. B. G. Maegraith, who was recently appointed to the Alfred Jones Chair of Tropical Medicine at the University, in succession to the late Prof. Warrington Yorke, has taken up his duties in the School, and has brought with him Surg. Lieut. R. E. Havard, whose services have been lent by the Royal Navy for the purpose of continuing in Liverpool the work on the therapy and pharmacology of mepacrine which had been carried on in the Army Malaria Research Unit under Prof. Maegraith's direction. Clinical trials of new antimalarial drugs synthesized by Imperial Chemical Industries are proceeding and the pharmacology of the most promising of them is being investigated in human volunteers and in patients. It is stated that the preliminary investigation of one drug of great promise—it is unnamed in the report, but apparently it is paludrine—is now being carried out both in prophylaxis and treatment in the field in the South-West Pacific and in India. Prof. Maegraith has undertaken a full investigation into its pharmacological properties, and the report adds: "There is reason to hope that this new compound may play an important part in the future treatment of malaria and that its development may lead to the preparation of further compounds even more effective."

The first investigation in this country of penicillin as a remedy for syphilis was entrusted to the Department of Chemotherapy at the School by the Penicillin Clinical Trials Committee of the Medical Research Council. This work is being undertaken in conjunction with the laboratories of the Public Health Department of the Liverpool Corporation. A serious limitation to the large-scale use of penicillin in a campaign against syphilis in civilian communities is the necessity, in officially recommended schemes of treatment, for confining patients to hospital during the course of injections. One of the main objectives of the present investigation, under Dr. E. M. Lourie, has therefore been to establish forms of penicillin treatment which would be effective if administered on an out-patient basis, without requiring any interference with the patient's daily occupation. Considerable progress has been made towards this end, and a report is in an advanced stage of preparation. Many data have also been accumulated on the fate of penicillin in the body after injection and on the mechanism of its action against spirochaetes.

# SURVEY OF FRACTURE TREATMENT*

BY

C. MAX PAGE, C.B., D.S.O., F.R.C.S.

The survey which I propose may be aptly introduced by a consideration of the historical side of the matter. Precise separation of the history of any subject into periods, convenient though it may be, is never fully accurate: any one period is in some degree the child of the past and the parent of the future. Acknowledging this limitation, I will divide the development of fracture and dislocation treatment in an arbitrary manner into three sections. The first may be called the "Galenical," extending from the earliest historical period to the Renaissance; the second, the "Hunterian," which follows it and reaches the time of Lister; and, lastly, the "modern," which within this century has been determined by the full development of aseptic surgery and radiological technique.

## The Galenical Period

The treatment of fractures and dislocations, if perhaps the simplest, is also the oldest section of the surgeon's art. Material for its study has been available in quantity so soon as a definite social organization was established. As early as the second millennium B.C., the reputed date of the fragmentary Edwin Smith papyrus (Breasted, 1923; Hussein, 1934), precise instructions on the management of some fractures and dislocations are to be found; in the Hippocratic canon of about 600 B.C. a more extensive account of the subject is set out. The Egyptian document reveals a remarkably high level of practice in some branches of surgical knowledge: for example, the treatment prescribed for a grossly displaced fracture of the clavicle closely resembles the procedure advised to-day in some text-books for the management of a similar injury in the case of a society beauty; the description of the diagnosis and treatment of a dislocated jaw might usefully inform the modern casualty dresser. In the Hippocratic treatise there is a fairly full account of the treatment of fractures and dislocations. The methods advised remained the basis of treatment up to and including the time of Ambroise Paré. For the rest of the Galenical period the lack of further literary evidence on current technique of fracture treatment is, however, striking: though it is true that in the first renaissance of French surgery in the early 14th century Henri de Mondeville and Guy de Chauliac did include the subject of fractures in their writings, this section of the former's works has been lost and that of the latter is essentially based on the Hippocratic tradition derived from the Arabian school. The same absence of written accounts of the subject is also noticeable in medical treatises of the early Sumerian, Indian, and Chinese medical writings. We may perhaps deduce from this that fracture management in the periods in question was mainly in the hands of illiterate practitioners of inferior status to the physician and that knowledge of the subject was passed on by mouth and example only. There is, at any rate, clear evidence that such was the case in the Roman Army organization. In general it would seem that the Roman surgeons and those of the Middle Ages did not get beyond the methods, still valid to-day, of direct clinical observation and the application of simple mechanical devices. This period therefore presents little of value to the active clinician; its interest remains mainly historical or associated with individual drama.

* Bradshaw Lecture before the Royal College of Surgeons of England on Nov. 8, 1945 (abridged).

## "Hunterian" Period: The Scientific Outlook

It was not till the Renaissance and in what I have classified as the "Hunterian" period that anatomical study and pathological investigation were gradually brought to bear on our subject. The works of Paré are the first to show something of this spirit. The advances in surgery effected by him (Paré, 1840) were mainly in the field of wound treatment. The section of his writings on fractures does, however, reflect his common-sense judgment on practical details. The chapter on dislocations reproduces in the main the traditional Hippocratic methods. Here is one of his figures showing that traction with the pulley and counter-traction were well understood (Fig. 1).

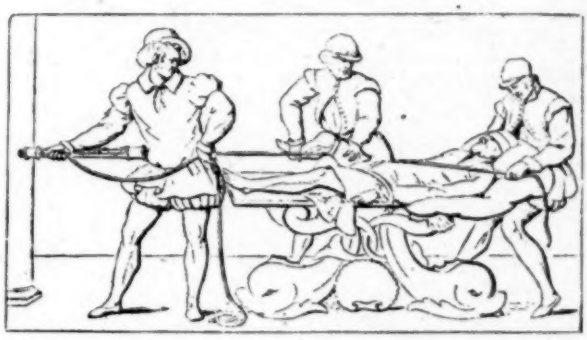

FIG. 1.—Method for reducing an anterior dislocation of the hip-joint. (From Paré's *Surgery*.)

The first contribution made in this country with a scientific outlook on the treatment of fractures was that by Percivall Pott. Pott was undoubtedly, after John Hunter, our outstanding surgeon of the 18th century. His writings range over a wide field, and his monograph on fractures and dislocations was not put forward as a treatise, but was entitled "a few remarks" on the subject and was printed with his *Head Injuries* in 1768 (Pott, 1808). Pott was conscious that all was not well in the treatment of fractures by surgeons of his day, and indeed recalls that he "some years ago had heard a Judge from the bench tell a jury that he believed a country bone-setter knew full as much, if not more, of the matter of his own business than any, the most eminent surgeon in the Kingdom." In his essay on this subject he is concerned to caution against the over-use of traction, and he emphasizes the value of a relaxed position of the joint both in relation to the reduction of deformity and in the maintenance of position after fracture. These principles are exemplified in the treatment set forth in his classical description of fracture-dislocations of the ankle. He appears to have been the first to define the necessity for fixing the joints immediately above and below a fractured long bone. In the treatment of compound fractures he is insistent on the importance of excluding air and advocates the use of a closed dressing, he himself having been successfully treated for an injury of this kind on that principle.

Sir James Earl in editing Pott's surgical work (1808) adds several practical points and gives details of a bed and beam convenient for managing fractures of the femur. This apparatus (Fig. 2) clearly antedates the Balkan beam, which was discovered anew in 1912.

*Sir Astley Cooper* first published his more ambitious treatise on the subject in 1810 (Cooper, 1823). The work is based on clinical lectures and case reports, and contains some fine plates (Figs. 3 and 4). His practice shows no great advance in detail on that of his predecessor. He extolled the value of the inclined

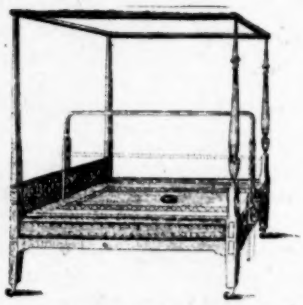

FIG. 2.—Earl's bed and beam.

FIG. 3.—Astley Cooper's treatment of dislocation.

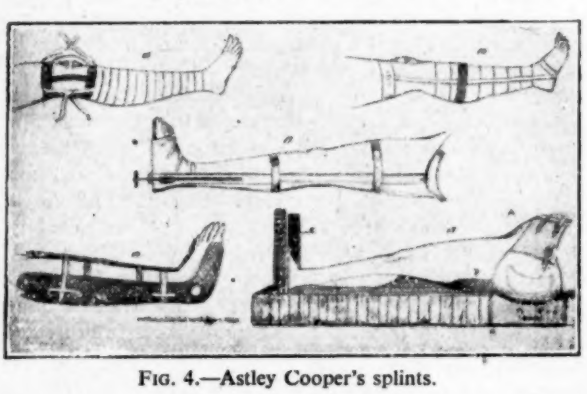

FIG. 4.—Astley Cooper's splints.

plane (introduced by White of Manchester) for the treatment of fractures of the shaft of the femur. His main claim to fame is based on his study of the intracapsular fracture of the neck of this bone. He clearly differentiated the outlook for intracapsular fractures from that for the extra-articular variety. He analysed the cause of non-union in the former, carrying out some experiments on dogs to prove his views, which closely conform to those held to-day. The ability to establish the differential diagnosis of these injuries without the assistance of radiology is a striking tribute to the clinical acumen of the surgeons of that time—though one cannot think they were always correct. For the treatment of intracapsular injuries he advocated 10 days in bed, after which the patient was placed in a chair and gradually worked up to such weight-bearing as he could manage. This style of treatment was still in vogue when I was a student.

Evidence of the somewhat crude standard of surgical methods in the early part of the 19th century, particularly in relation to the reduction of dislocations, is to be found in many case reports reproduced by Malgaigne (1847). He recites the experience of Delpech, who had some difficulty in reducing a dislocation of the shoulder recently sustained by the Mayor of Nîmes. Traction was exercised by 10 assistants and is said to have been successful in obtaining reduction, but during the manipulation the Mayor turned pale, lost consciousness, and did not recover—he was found to be dead.

Michaux, at Louvain, when attempting to reduce a recently dislocated elbow in a boy of 10 produced a rupture of the brachial artery. Gangrene followed, and the arm was amputated six days later. Flaubert, the well-known Rouen surgeon and father of the author of *Madame Bovary*, reports on a woman of 70 with a 38-day-old axillary dislocation of the humerus. Eight assistants were charged with applying traction. The cries of the patient were so violent that emphysema was produced below the clavicle. This was followed by a hemiplegia and syncope. Death took place 18 days later. A dissection showed that the four lower cords of the brachial plexus had been torn out of the cord. Altogether Malgaigne reports 11 ruptures of the axillary vessels, 3 examples of avulsion of the brachial plexus, and one of ruptured lung from similar procedures, all being conducted without anaesthesia. He himself advises that when traction and manipulation have been carried on for half an hour without success it is prudent to stop.

During the latter part of the "Hunterian" period the literature shows a great development of interest by the general surgeon in fracture treatment. Most of their contributions were concerned with methods of splintage and bandaging, and it may be well to consider here this section of our subject. From an early period padded wooden splints were in common use: the splints were plain slats of wood, and a fit to the contour of the limb depended on the padding. In Egypt in the dynastic period sewn bundles of reed were employed, and were of a more adaptable nature. Similar appliances of straw or reed—called farrons—were also well known and in use by most surgeons in the Middle Ages. Bandages of linen or other woven material date back to the earliest times. The introduction of bandages impregnated with egg-white and flour is attributed to Albucasis in the 11th century, and their use is mentioned by Paré, Fabricius, Wiseman, Cheselden, and Larrey, and they had considerable popularity till displaced first by the starch bandage of Seutin and later by those impregnated with plaster-of-Paris (Malgaigne, 1840). The use of the latter is now so fully established and forms so important a part of the fracture surgeon's equipment that it is of some interest to trace its gradual development.

### Development of Use of Plaster-of-Paris

Oddly enough, the earliest application of plaster-of-Paris is attributed to the surgeons of the Middle East. In 1760 a Mr. Eaton, English Consul at Basra, reports an instance of broken leg treated in plaster with success by a native practitioner after amputation had been advised by a European surgeon. Malgaigne states that plaster-of-Paris was first used in Europe in 1814 at Groningen, and a few years later by Hubenthal. The practice of the latter was to oil the skin and use two half-moulds bandaged together. In 1828 Keyl in some degree popularized the method at the Charité Hospital in Berlin. In English literature the earliest published references came from provincial centres. Bond and Gale (1833–4) of Glastonbury recorded the

use of a plaster mould in the treatment of a fracture of the femur. They associated traction applied through an anklet, and say that this was the only source of trouble in the management of the case. These authors further suggest the use of the method for fractures of the neck of the femur, and say that for such injuries both femoral trochanters should be enclosed in the plaster.

In the same year Dr. Browne (1833–4) of Drogheda reported in the *Lancet* that a medical gentleman, middle-aged but of active habits and sanguine temperament, fell from his horse on a rough road and sustained a fracture of the tibia about its centre. At the end of six weeks there was no union, and so the author and a colleague proposed to pass a seton between the fragments: this the patient refused, and Prof. Kirby of Dublin was called in consultation. He put the leg in a complete plaster mould—"the leg, foot, and lower quarter of the thigh were encased in plaster-of-Paris 1 in. to 1½ in. in thickness." Union was found to have taken place six weeks later.

Dr. Browne says Prof. Kirby had used the method for fractures of the legs for 10 years past. The only criticism advanced by the former was the need for hard work with chisel and hammer in order to remove the case in due course.

It is sometimes stated that plaster-of-Paris was employed by Larrey during the Napoleonic campaigns, but I can find no record of this. The idea may have arisen from Larrey's strong advocacy of "appareils immobiles" (Larrey, 1812). These were constructed with the help of bandages impregnated with flour and white of egg. He records leaving such applications on compound fractures and amputation stumps for several weeks or even months without re-dressing, and with very great success. His advocacy of the closed dressing seems to have been but little followed till the time of Unna, Winnett Orr, and Trueta.

The plaster bandage was undoubtedly invented by a Dutch Army surgeon Mathijsen (1852). The value of this technique in fracture treatment was fully recognized, and publicized, by a Belgian, Van de Loo (1852–3). The method attracted great interest at the time in the Belgian Academy of Medicine and was discussed there with considerable acrimony; it was finally submitted to a Commission of the Academy in 1852 for report. A majority verdict in favour of the procedure was returned.

Plaster splintage was employed by both French and Germans in the war of 1870 (Délorme, 1888–93), and its use in the Crimean War is reported on by Pirogoff (1864), but I have not been able to find details of the exact methods employed. In England the application of plaster found little support till Croft (1878) of St. Thomas's published his method of making a bivalved case from impregnated house flannel. Maisonneuve had at an earlier date, in France, introduced the use of plaster-soaked tarlatan strips—a technique which was subsequently employed and elaborated by Delbet (Le Dentu and Delbet, 1915) in his ambulatory splints. The later history of the use of plaster-of-Paris takes us forward to recent times.

Before turning to the "modern" period I would call attention to a point of interest: the publications of British surgeons on fracture treatment during the 19th century and the first decade of the present century are singularly lacking in number or interest, though the monograph of H. O. Thomas, published in 1886, and that of Lane, which appeared in 1905, form exceptions to this statement.

To judge by its literature the surgery of injuries attracted considerable attention in France and Germany during the same period. Malgaigne stands out in the first half on account of both his bibliographic industry and his scientific approach to practical problems. Bardenheuer elaborated a system of the positional treatment of all fractures by means of traction applied with the help of adhesive strapping, following Buck. His monograph (Bardenheuer, 1889) represents a definite advance in the mechanical conception of the subject, the principles of which form the basis of most methods in use to-day. Helferich (1895) of Munich produced the best textbook on fractures in the latter half of the century, and in his later editions he describes and figures Thomas's knee-splint in relation to the treatment of the fractured femur and extols its use for ambulatory purposes three or four weeks after the injury. Jonathan Hutchinson junior abstracted this work for the New Sydenham Society in 1897 and reproduces these particulars. In the U.S.A. full textbooks on the subject were published by Stimson and Scudder towards the end of the century.

### The "Modern" Period

The "modern" period is introduced by the discoveries of Pasteur, and their application by Lister to surgical technique. The value of antisepsis in the treatment of compound fractures was soon generally, though by no means universally, recognized, and the operative treatment of a limited group of fractures had been carried out sporadically since Lister had shown the possibility of wiring the patella with impunity. Lane in this country, and contemporaneously Lambotte of Antwerp, were the first to employ the method systematically. Lane published his *Operative Treatment of Fractures* in 1905 and Lambotte in 1906 (Lambotte, 1913). Both authors produced second editions of these monographs. It must be admitted that the French work, in its study of the mechanical side of the problem, is much the superior. Lane devoted a large part of his book to a disquisition on body position and function in relation to advanced osteo-arthritis. He displayed a superb self-confidence in his own methods and a considerable contempt for the abilities of his contemporaries. His exposition of the "no-touch" technique was perhaps the most valuable part of the publication. Here is the introductory paragraph to his description of it.

"If the surgeon has not succeeded in such a simple operation as wiring fractures of the patella without killing or permanently disabling many of his patients, he had better bring himself to believe that the results of the generally accepted methods of treatment are excellent, and that any statements to the contrary are exaggerated or imaginary, and leave operations on recent fractures alone, since they may test the methods and skill of the operator to the utmost."

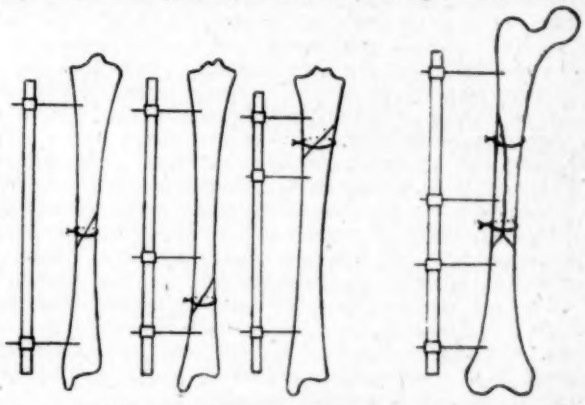

FIG. 5.—Diagrams showing Lambotte's "prothèse externe" method. (From *Chirurgie Opératoire des Fractures*, 1913, Paris.)

Lambotte discusses in detail the relative merits of various interior fixing agents. He designed plates shaped to the contour of the bone-shaft and employed screws with a grub (Whitworth) thread. He appreciated the value of transfixing with his screws both sides of the bone when operating on diaphysial injuries. He also introduced his "prothèse externe," the origins of which he traces to Malgaigne's hooks and suggestions of Rigaud; he was of the opinion that it was the ideal method for managing fractures of the shaft of the thigh and tibia (Figs. 5 and 6). Its failure to gain acceptance was presumably due to the frequency with which infection arose round the rod-holes.

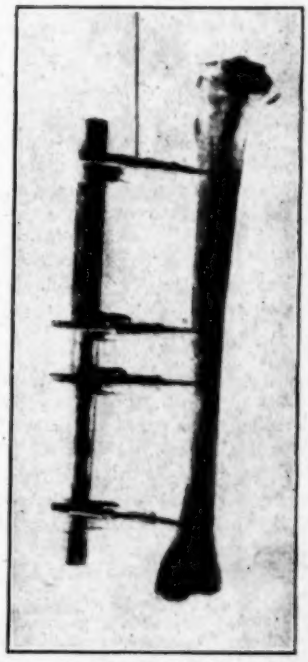

FIG. 6.—Lambotte's "prothèse externe." (From *Chirurgie Opératoire des Fractures.*)

Osteosynthesis by screw and plate, however, gained a considerable hold on the surgical world. Sherman in Cleveland championed it in America, and it has held its place in France up to the present time. In this country its many failures in other hands than those of Lane were instrumental in preventing its routine adoption and in creating some prejudice against it.

Another school of fracture treatment which came into being in the same period was that of Lucas-Championnière. In 1880 he published his *Le Mouvement est la Vie*, and in 1895 the bulky *Le Traitement des Fractures par le Massage et la Mobilisation*. His views were much criticized by surgeons of the day, and his method found little place in the treatment of injuries of the lower limbs. Its value in upper-limb fractures was considerable, and in 1912 Dr. J. B. Mennell organized a successful out-patient fracture clinic at St. Thomas's Hospital which followed this school. Moreover, its general influence was important in turning surgical thought towards the maintenance and restoration of function of the soft parts after injury.

In 1907 Steinmann (Steinmann, 1907, 1912) put forward his "Nagelextension"—a system based on Bardenheuer's application of traction, but with a direct nail- or pin-hold of the bone in place of adhesive plaster. He had been preceded by Codivilla so far as the basic idea was concerned. Despite the full exposition of his method in the German press it attracted no attention in this country till 8 or 10 years had passed.

It is about this date that the outstanding influence of the advance in radiology comes into evidence. The precision in the diagnosis of fractures which it furnishes has had its repercussions. The patient may expect too much from his surgeon; the surgeon may be over-impressed with the importance of complete reduction of displaced fragments. Another contribution, however, is the recognition of fractures where none were recognized before. Linear fractures of the carpal scaphoid and the various stress fractures are examples of this. Whether the elaboration of treatment imposed by such recognition has always been in the interest of the patient is a matter of opinion. In another direction advance in radiological technique has been equally interesting: the process of bone absorption and formation can now be almost kept under view, and this evidence forms the basis on which a new pathology of bone may be built up. If we do not all agree on, or if we are ignorant of, the why, we are able to observe the changes which bone undergoes both at the seat of injury and at a distance. The post-traumatic dystrophies of bone and the problems of calcium metabolism await the future for their elucidation.

### Wartime Stimulus to Fracture Treatment

The advent of war in 1914 exposed the poverty in knowledge of fracture treatment of British surgeons as a whole. Initially, the Army splint equipment was antiquated and insufficient in quantity for the scale of casualties met with. The long Liston was the only splint available for fixing the broken thigh in the field or at the base. We had no idea of the value of the Thomas splint in the management of a broken thigh; the same was true in regard to the use of skeletal traction. Sir Robert Jones, with promptitude and great activity, made known the use and induced the production of the former. This introduction of the Thomas splint was of major importance in reducing loss of life or limb after open fracture of the femur. Its advent was enthusiastically acclaimed by Army surgeons, and incited the introduction of many auxiliary gadgets and modifications in its form and methods of use, some of which still make the Liverpool purist rend his hair. The application of skeletal traction was more slowly adopted. It was first employed in the not very satisfactory form of a calliper. Plaster-of-Paris was seldom used by us in the field during the campaign, though both German and French Armies employed it at that level.

The stimulus given to the study of injury treatment during four years of war was passed on to the peaceful years. Monographs and contributions on fractures and their treatment became so numerous for the next 20 years that I shall not attempt to analyse them all. Indeed, I may quote Shakespeare:

> "Vouchsafe to those who have not read the story,
> That I may prompt them: and of such as have,
> I humbly pray them to admit the excuse
> Of time, of numbers and due course of things."

Certain trends of thought and some individual techniques may well be studied. The 1914 war had shown the value of segregation of certain injuries in its reaction both on the individual patient and on progress in methods of treatment. The Delavingne report showed how much segregation would benefit the general population in peacetime. A fracture clinic had been organized at the Ancoats Hospital at Manchester immediately after the last war by Harry Platt (1938) and formed a model which has extended to most other large hospital centres. I will not attempt to decide whether such organizations should limit their activities to the treatment of fractures only, or whether they should include certain other injuries or accidents in general. Nor will I discuss whether such services should be directed by a general or a so-called orthopaedic surgeon. I think the undoubted success in fracture work has been based on the provision and training of whole-time assistants skilled in splint management and plaster work. The control of their own x-ray apparatus, the arrangements for routine after-care, and the central management of rehabilitation are further advantages possessed by units of this character.

Skeletal traction, as has been mentioned before, came into use among British surgeons at the end of the 1914 war. The introduction by Kirschner in 1927 of strained wire in the place of nails or pins gave an impetus to its popularity and an opportunity for the invention of much ingenious auxiliary apparatus (Wilson, 1932). I am inclined to think its application to hand and foot fractures did more harm than good; its use for the major bones seems to be declining in popularity as opposed to the rigid pin. The power of skeletal traction can be such that distraction of the broken ends of the bones is easily effected. There is a widely held impression that operation of this fact has been responsible in the latter years for a considerable increase in the incidence of delayed union or non-union.

The school of Boehler in Vienna made a considerable impact in this country in the early 'thirties (Boehler, 1935). His association of the skin-tight plaster with active movement may be said to have embraced both the ideas of Lucas-Championnière and of Delbet without showing the failings of either. His reduction of the deformities in impacted fractures of the calcis and vertebral bodies opened up new possibilities, which in the case of the latter have proved fruitful in results. I think this influence has been gradually replaced by the Watson-Jones (1943) school working on a wider and more scientific basis. The latter has both introduced new methods and incorporated those which have proved useful in the old.

One of the technical triumphs of the period under consideration has undoubtedly been in the management of transcervical fractures of the femur. Royal Whitman (1925) demonstrated the mechanics of the accurate reduction of these injuries. His method of fixation was the full plaster spica. Despite the success of the method in his hands it possessed many drawbacks, and Smith-Petersen's (1931) introduction of internal fixation by means of a trifin pin overcame many of them. The replacement of closed pinning under radiological control initiated by Johansson (1932) extended the possibility of using the procedure in the feeblest of subjects. The final results have perhaps not come up to our first expectations. Here are some figures collected by Mr. Peter Elmes at Oxford, to whom I am indebted for their use before publication and final analysis; they give perhaps an average picture of the outcome of this method.

*Results of Pinning Operations for Transcervical Fractures of the Femur*

| | |
|---|---|
| Cases studied | 195 |
| At time of investigation had died | 24 |
| " " not traced | 43 |
| Too recent to be of value (less than 2 years' follow-up) | 13 |
| No. of cases analysed (at least 2-year follow-up) | 115 |
| Completely satisfactory | 35 (30½%) |
| Fair results (slight pain or limitation of movement) | 42 (36½%) |
| Failure of union | 38 (33%) |

No doubt further systematic follow-ups will soon become available, and we may be able to judge how far the failures are due to errors in technique or are inherent in the method. Many active brains are concerned with this problem, and the future should show further improvements in the management of injury for so long the despair of the profession.

It is perhaps too early to assess the value of the Roger Anderson (1936) apparatus. At first sight this ingenious appliance was so attractive and effective when operated by skilled hands that one felt that the treatment of diaphyseal fractures was solved for good. Experience in this country

to date shows that it has drawbacks, and it is well to remember that Lambotte, 30 years ago, thought he had a winner on similar lines.

Deriving perhaps from American and French practice, there has lately been a strong move in some centres to return to the more frequent use of osteosynthesis. The introduction of plates and screws made of metals which develop little or no electrolytic action in the tissues seems to have been one factor responsible, though I incline to the opinion that its importance has been overstressed. The realization of the value of a grub-threaded screw holding both sides of the cortex perhaps carries more weight. What position it will hold in our practice 10 years hence it is difficult to say. If open osteosynthesis is adopted as a routine measure it may be hoped that it will be carried out so as to conform to the ideal set out by Burns and Young (1944)—i.e., to be mechanically sound enough to make post-operative splintage unnecessary and so to allow of activity of muscles and movements of joints at an appropriate time. To carry out an open operation on a broken tibia and fix the fracture with one or two screws, and then encase the limb in plaster for a couple of months, is to concentrate too much on form and to forget function.

The recent war has tested our knowledge and competence in the handling of open fractures, and I think it is generally admitted that British surgery has come well out of the ordeal. No outstanding new methods have been introduced. The Thomas splint, often disguised as a Tobruk, has stood the test of time. The use of the closed plaster, so ably advocated by Trueta, has found its level. The employment of plaster-of-Paris in the field, with due precautions, has been greatly extended, and I think the general use and proper application of the thoraco-brachial spica has saved many arms which would have been lost in the last war.

### Conclusion

I must admit that my survey has covered so wide a field that it has been but superficial. I hope it has given some measure of the striking progress which has been achieved in this century. In the immediate future advances in the standard of fracture management will perhaps depend more on the organization of our accident services than on any radical changes in method.

I think I have shown that, in the past, technique has often outridden judgment and experience. I hope that I have demonstrated the importance of controlled observation with any new experiment in this branch of our work.

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## NUTRITION IN VIENNA IN SEPTEMBER, 1945


BY

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During the approaching winter Vienna may be subjected to conditions approximating to famine unless strenuous efforts are made by the responsible national elements of the Allied Council. Even under the most favourable circumstances Austria has never produced enough food to support herself, and this year the ravages of war have substantially reduced the amounts normally grown. In order to supply sufficient food for Vienna it will therefore be necessary for provisions to be imported. The physical difficulties of importing supplies are great, and in addition there are competing claims for food elsewhere and the complications of international politics and international finance. It is consequently of interest to study in some detail the present nutritional state of the city in order to be able to gauge with open eyes the probable results of future events as they gradually unfold.

The city of Vienna was captured from the Nazis at the end of April, 1945, after prolonged street fighting. For some time after the fall of the city the local administration was unable to issue weekly rations, and the population were compelled to subsist on any domestic stores of food they might possess. When it became obvious at the beginning of June that domestic and retail stocks were almost exhausted and that the people would starve unless food was provided for them, the Russians permitted the release of sufficient supplies to enable a ration of bread, cereal, meat, fats, and sugar to be distributed. This ration provided normal consumers with about 800 calories daily. Certain types of workers received more, but the biggest ration issued to the heavy-worker category provided only about 1,600 calories. The only official addition to the rations was an issue of a half-litre of milk a day to children up to 1 year old and a quarter-litre of milk to children from 1 to 3 years. No supplement was given to pregnant women. Unofficial additions to the food supply were scanty. For normal individuals no worth-while supplement of calories was available. To obtain vitamin C and vitamin A, in which the rations were entirely deficient, people might acquire small amounts of potatoes and vegetables from gardens or allotments, or they might make expeditions into the country, but, apart from certain supplies for canteens which will be mentioned later, there was no organized provision of fresh vegetables, potatoes, or, except for the youngest children, milk.

Early in September the Allied Council was set up and each of the four nations in the Council assumed the responsibility of contributing food to Vienna. It was jointly agreed to try, as from Sept. 23, to provide the normal consumer with a minimum ration of 1,550 calories (with differentiation: up to 3,000 calories for the very heavy worker; for various other groups, according to the type of labour they perform). Fig. 1 shows the fluctuation in the calorific value of the rations issued to normal consumers in Vienna from Jan., 1945, in the last weeks of the Nazi State, through the period of fighting and disorganization in April and May, when no rations were distributed, up till Oct., 1945, when the Allied Council target of 1,550 calories daily was being achieved.

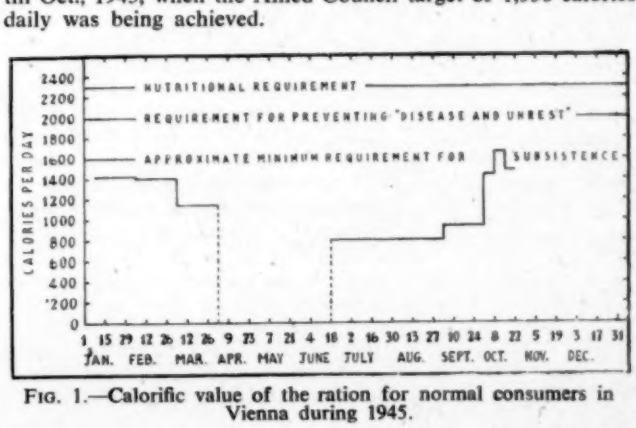


FIG. 1.—Calorific value of the ration for normal consumers in Vienna during 1945.

### Dietary Survey

During the second and third weeks of Sept., 1945, an effort was made to assess the composition of the total diet actually being eaten by the population of Vienna. The technique adopted was essentially that used by Wiehl (1942). This method depends upon the questioning of the people about everything they have eaten during the previous 24 hours. Whenever an item is mentioned an equivalent amount made available at the interview is weighed. In the case of soups, which are a distinctive feature of the Vienna diet, and of made-up dishes, plates of different sizes were used to determine quantities. Recipes were obtained from women in a number of districts to discover the amounts of ingredients currently used. The composition of the official rations provided for normal consumers at the time the survey was made is shown in Table I.

TABLE I.—*Composition of the Normal Consumer's Ration in Vienna during the Week Beginning Sept. 3, 1945*

| | Daily Issue (g.) | Calories | Protein (g.) | Fat (g.) | Calcium (mg.) | Iron (mg.) | Vit. A (i.u.) | Vit. $B_1$ (mg.) | Riboflavin (mg.) | Nicotinic Acid (mg.) | Vit. C (mg.) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pulses .. .. | 40 | 122 | 9·6 | 0·4 | 40 | 3·2 | 0 | 0·20 | 0·14 | 0·5 | 0 |
| Fat .. .. | 7·1 | 64 | 0 | 6·5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bread .. .. | 300 | 747 | 23·7 | 3·3 | 40 | 5·4 | 0 | 0·60 | 0·21 | 2·1 | 0 |
| Total daily intake .. .. | | 933 | 33·3 | 10·2 | 80 | 8·6 | 0 | 0·80 | 0·35 | 2·6 | 0 |

TABLE II.—*Composition of the Average Daily Diet Eaten by Normal Consumers in Vienna between Sept. 9 and 16, 1945*

| | Calories | Protein (g.) | Fat (g.) | Calcium (mg.) | Iron (mg.) | Vit. A (i.u.) | Vit. $B_1$ (mg.) | Riboflavin (mg.) | Nicotinic Acid (mg.) | Vit. C (mg.) |
|---|---|---|---|---|---|---|---|---|---|---|
| Bezirk III (25 people: 7 men, 18 women) .. .. | 940 | 49 | 9 | 240 | 13 | 50 | 0·94 | 0·47 | 5·9 | 7 |
| Bezirk XI (20 people: 5 men, 15 women) .. .. | 1,100 | 49 | 6 | 330 | 15 | 4,200 | 1·26 | 0·81 | 8·2 | 50 |

TABLE III.—*Composition of Meals Served in Werksküchen in Vienna, Sept., 1945*

| | Calories | Protein (g.) | Fat (g.) | Calcium (mg.) | Iron (mg.) | Vit. A (i.u.) | Vit. $B_1$ (mg.) | Riboflavin (mg.) | Nicotinic Acid (mg.) | Vit. C (mg.) |
|---|---|---|---|---|---|---|---|---|---|---|
| Marine engineers, Bezirk III .. .. .. .. | 975 | 30 | 35 | 140 | 8·5 | 130 | 0·76 | 0·42 | 9·3 | 19 |
| Machine shop, Bezirk XI .. .. .. .. | 635 | 41 | 2 | 170 | 13·1 | 30 | 0·94 | 0·53 | 4·4 | 4 |
| Central kitchen, Bezirk V .. .. .. .. | 645 | 15 | 11 | 50 | 4·1 | 40 | 0·57 | 0·20 | 3·5 | 10 |

TABLE IV.—*Composition of the Average Daily Diet Eaten by Industrial Workers in Vienna, Sept., 1945*

| | Calories | Protein (g.) | Fat (g.) | Calcium (mg.) | Iron (mg.) | Vit. A (i.u.) | Vit. $B_1$ (mg.) | Riboflavin (mg.) | Nicotinic Acid (mg.) | Vit. C (mg.) |
|---|---|---|---|---|---|---|---|---|---|---|
| Marine engineers, Bz. III (group of 15 men) .. | 1,760 | 66 | 40 | 260 | 19 | 170 | 1·57 | 0·82 | 13·6 | 26 |
| Machine shop, Bz. XI (group of 20 men) .. | 1,430 | 71 | 9 | 390 | 21 | 2,610 | 1·64 | 0·97 | 8·6 | 34 |

TABLE V.—*Composition of the Average Daily Diet Eaten by 10-year-old School-children in Vienna, Sept., 1945*

| | Calories | Protein (g.) | Fat (g.) | Calcium (mg.) | Iron (mg.) | Vit. A (i.u.) | Vit. $B_1$ (mg.) | Riboflavin (mg.) | Nicotinic Acid (mg.) | Vit. (mg.) |
|---|---|---|---|---|---|---|---|---|---|---|
| Group of 20 boys .. .. .. .. .. | 1,340 | 36 | 16 | 360 | 16 | 3,250 | 1·29 | 0·84 | 8·6 | 35 |
| Group of 20 girls .. .. .. .. .. | 1,250 | 61 | 10 | 260 | 17 | 1,660 | 1·33 | 0·76 | 8·2 | 30 |

Two groups of normal consumers—that is, people entitled only to the ration shown above—were investigated in different parts of the city. A room was set aside in a public office (Katestelle) in Bezirk III and in Bezirk XI, and people were taken at random for examination from the queues which constantly form in these places. The composition of the average diets eaten by these two groups is shown in Table II. In calculating the nutritional values the table of food composition given in *Nutrition and Relief Work* (1945) has been used in most cases.

It is difficult to assess figures for the minimum nutrient intake needed to maintain an adult at a level of bare subsistence. If 1,600 calories is tentatively chosen as the lowest energy intake capable of preventing continuous physical deterioration, the Vienna diet in September is seen to have been grossly inadequate. Figures of 50 g. protein, 500 mg. calcium, 10 mg. iron, 0.7 mg. vitamin $B_1$, and 6 mg. nicotinic acid may perhaps be regarded as approximately the daily amounts needed to support subsistence; with respect to these nutrients the diet makes reasonable provision. The striking difference between the amounts of vitamin A, riboflavin, and vitamin C in the average diets eaten by the two groups of people studied is of considerable interest. If it be assumed that at least 2,500 i.u. of vitamin A, 0.85 mg. of riboflavin, and 25 mg. of vitamin C are required for a subsistence diet it can be seen that, whereas the food eaten by the group in Bezirk III was seriously deficient in all three of these nutrients, in Bezirk XI an adequate intake was available. The reason for these differences appears to lie in the fact that Bezirk XI, which covers the working-class district of Simmering, contains large areas of allotments and is situated nearer the outskirts of the town. Of the people whose diet was studied there, 60% had eaten potatoes during the day and 45% had eaten green vegetables or tomatoes. Some of these potatoes and vegetables were stated to have come from gardens or been brought in from the country; the rest were frankly admitted to have been bought in the black market.

Bezirk III, on the other hand, covers a central industrial and commercial section of Vienna. Although 48% of the people interrogated there had eaten some quantity of potatoes, from which the whole of the small and inadequate amount of vitamin C shown in the table was derived, none had access to gardens or was able to obtain vegetables from the country or elsewhere. The general deficiency of calcium in all the diets was principally due to the complete lack of milk or cheese.

### Factory Workers

Out of Vienna's population of 1,400,000 in Sept., 1945, about 250,000 ate a midday meal in a canteen for six days a week. In order to do this they sacrificed coupons representing 300 g. of bread. Most of the canteens were Werksküchen attached to factories or business houses. In addition there were a number of public canteens, where the sacrifice of 500 g. of bread weekly was demanded. The food supplies made available to canteens included not only the bread or its equivalent obtainable from the coupons given up by diners but also

issue of 50 g. of pulses, 500 g. of potatoes, and an indeterminate supply of meat (usually horse) and other foods issued somewhat capriciously as stocks allowed on a special Bezugschein. Thus, people with access to Werksküchen got a better diet than that shown by their ration entitlement. Furthermore, although some of those who used canteens were doing heavy work, many were employed in banks or offices. It was therefore clearly of importance to investigate the nutritional value of the diet of this section of the population.

Surveys were carried out in two factories. The first was a marine engineering works and office in Bezirk III, and the second a big machine shop at Simmering, in Bezirk XI. In addition to a study of the diet of these two groups of works and an investigation of the canteen meals provided, the nutritional value of the meals issued from a large central kitchen in Bezirk V was also calculated. This kitchen was preparing about 50,000 meals daily, 27,000 of which were issued in insulated containers to 290 canteens in all parts of Vienna. The remaining meals were used to feed camps of refugees from Sudetenland. The nutritional value of the meals actually issued from the two factories and the central kitchen is shown in Table III. It can be seen from this table that the sacrifice of 300 g. of bread, providing 747 calories, represents a highly favourable exchange for six meals each of, say, 650 calories, or, in total, 3,900 calories.

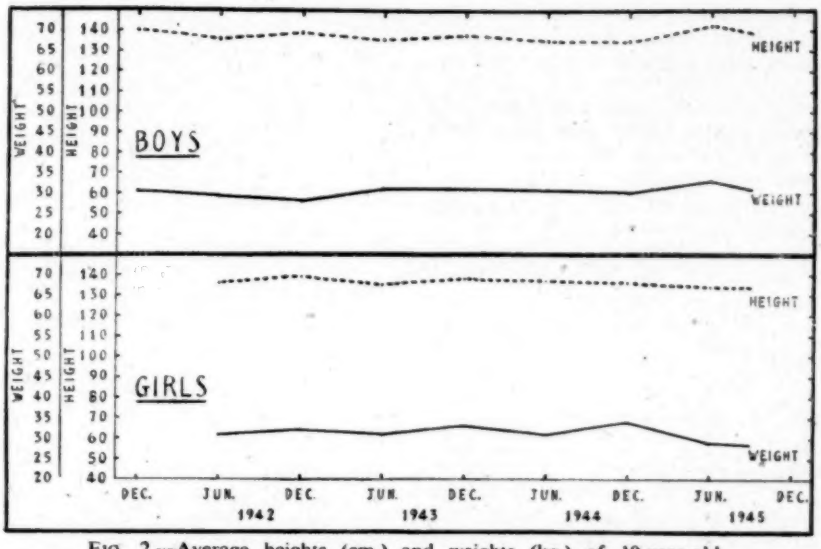


FIG. 2.—Average heights (cm.) and weights (kg.) of 10-year-old school-children in Vienna, Dec., 1941, to Sept., 1945.

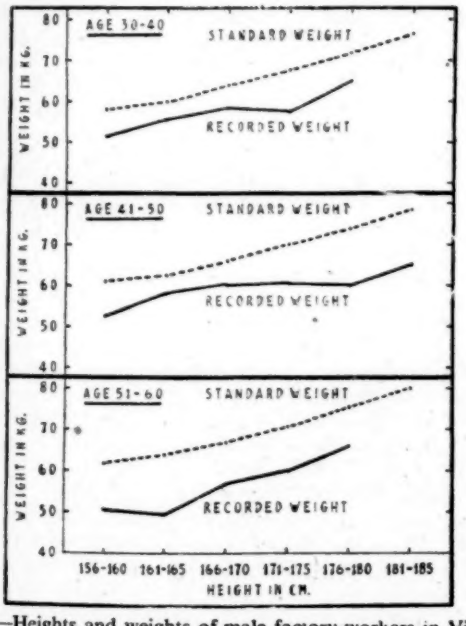


FIG. 3.—Heights and weights of male factory-workers in Vienna, Sept., 1945. (Based on the weights of 594 men.)

A group of employees at each of the two factories mentioned above was studied. Most of the individuals comprising these groups possessed workers' or heavy-workers' ration cards, entitling the holders to food providing 1,350 and 1,620 calories respectively. The right to hold such cards does not necessarily depend on the physical activity of the work done. Under the then current system, clergymen, municipal officials, senior police officers, people working in any capacity in hospitals, teachers, and many others are considered to be "heavy workers." In the two factories studied, although a certain amount of work, notably repairs to the factory buildings, was in progress, the general level of activity was not very high. The composition of the diets eaten is shown in Table IV.

In order to do a reasonable amount of physical work a man needs at least 3,000 calories. The figures above show, therefore, that the amount of food eaten in Sept., 1945, by workpeople in Vienna was not sufficient for active physical labour. The general character of the diet—its deficiencies in calcium and in Bezirk III in vitamin A—was, as would be expected, similar to that found in the case of normal consumers. The better distribution of vitamin C was largely due to the official issue of potatoes to canteens. Green vegetables and tomatoes—upon which, in the absence of dairy produce, the diet depends for vitamin A and to a lesser degree for riboflavin and other nutrients—were again available only from gardens, friends, or illegal sources, and were again more plentiful in Bezirk XI.

### Children

The diets eaten by two groups of children 10 years old—20 boys and 20 girls—were investigated in two separate schools in Bezirk V. The results of this work are shown in Table V. The rations to which children of this age were entitled provided about 850 calories daily. Milk was available only for children up to 3, so that these 10-year-old boys and girls officially received none. Out of the 40 children examined, milk was reported in the diet of only 5, who had obtained what small amount they had consumed from brothers or sisters 3 years old or younger.

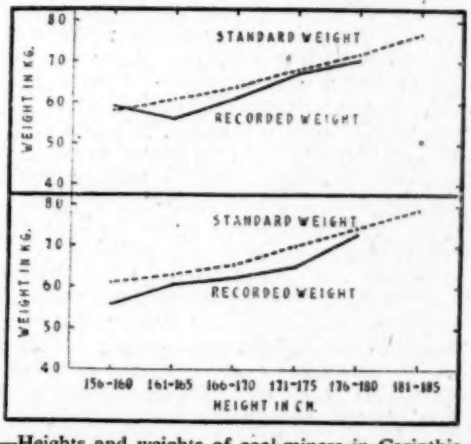


FIG. 4.—Heights and weights of coal-miners in Carinthia, Sept., 1945. (Average weight found from total of 282 men.)

From the figures given in Table V it can be seen that, although the give-and-take of family catering enabled them to get more to eat than their rations allowed, the children studied were receiving little more than half the 2,500 calories probably needed for proper growth, and that their diets were deficient in protein and riboflavin and seriously deficient in calcium.

The level of vitamin A and vitamin C was precariously maintained by off-the-ration vegetables and potatoes.

### Body Weight

In an attempt to assess the effect of the food shortage in Vienna during the period from April to Sept., 1945, a series of body-weight records have been collected. Although the medical examination of school-children was reasonably well maintained during the course of the year, the collected records for the city for the period covered by the war appear to have been destroyed. It was found, however, that, at the two schools where the dietary studies were made, the children's biographical records, including their heights and weights, had been kept up to date. In Fig. 2 the average heights and weights of those children who were 10 years old at each of the dates shown have been plotted for the period from Dec., 1941, up to Sept., 1945. The general trend of these graphs suggests that, so far, no serious check in the growth of the children had occurred.

A second and more comprehensive record of body weights has been made of those employed in the large engineering works in Bezirk XI referred to in Table III. The heights and weights of the men, taken while they were wearing shirts and trousers and without shoes, are shown in Fig. 3, where they have been compared with standard British statistics for men of comparable age groups (Davidson and Anderson, 1940). From these observations it appears that, on the average, the men between 30 and 40 years of age were about 8 kg. under weight, and those between 40 and 50 and between 50 and 60 about 10 kg. under weight.

Fig. 4 has been included here as an interesting comparison and as a justification for using the British height–weight standards. It shows the body weights of a group of 282 miners at a brown-coal mine at St. Stefan, in Carinthia, one of the British-occupied provinces of Austria. When the weighings were made the men were receiving rations providing about 2,300 calories daily. The mine is situated in a rural district, and the quantity of unrationed food available at that time was estimated by supply officials to provide a supplement of about 800 to 1,000 calories daily. Thus the total food intake was greater than 3,000 calories. Since the men were weighed naked after having taken their baths, it appears that their weights closely approximated to the standard figures.

### Discussion

The situation facing Vienna as winter draws nearer is a dangerous one. The sheer lack of calories shown by this September survey has been partially remedied by the provision of additional food, including meat, fats, and sugar. But the situation as shown by Fig. 1, although improved, is nevertheless precarious. The number of cases of hunger oedema for which extra rations were being provided by the Austrian authorities during the first weeks of October was from 200 to 300. This number from a city of 1,400,000 is not yet catastrophic, but shows that there is no margin to spare. The protein position has also been improved by the better rations; but supplies of milk for children, while increased, have not yet allowed any issue to be made to those over 6 years old, although it had been hoped to provide milk up to the age of 12. There is no issue of milk to adults, with the exception of a ration for pregnant women. To reduce the deficiency of calcium in the diet, which is primarily due to the lack of milk products, chalk is to be added to the flour.

For vitamin A and vitamin C, and to some extent for riboflavin, the Viennese diet depends entirely on potatoes and vegetables. Great efforts are being made to ensure that a ration of these items shall be distributed. Supplies of vitamin concentrates might serve as reinsurance.

Thus the position in Vienna this autumn has been assessed, and it is hoped that the action it has been possible to take can reasonably be expected at least to allow the population to subsist during the winter. The fact, however, must be faced that the level of nutrition upon which the Viennese must build their defences against cold and disease is dangerously low.

### Summary

A dietary survey carried out in Vienna in Sept., 1945, at the beginning of British participation in the administration of the city showed that at that time the diet available to two random groups of normal consumers provided only about 1,000 calories; factory-workers were obtaining from 1,400 to about 1,800 calories; and children 10 years old about 1,300 calories. The adults' diets were deficient in calcium and often grossly lacking in vitamins A and C. The protein content of the children's diet was inadequate, owing in large measure to the fact that no milk was available for any over the age of 3 years. All the diets failed by a wide margin to provide the nutritional targets recommended by the U.S. National Research Council.

No pronounced drop was recorded in the heights and weights of the children studied. It appeared, however, that men working in a large factory in Vienna were on average from 8 to 10 kg. under weight.

This brief survey of the level of the diet in Vienna in Sept., 1945, underlines the difficulties and dangers likely to be encountered before winter is passed.

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## TOXIC EFFECTS OF 2,2-*bis* (*p*-CHLORPHENYL) 1,1,1-TRICHLORETHANE (D.D.T.) IN MAN

BY

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2,2-*bis* (p-chlorphenyl) 1,1,1-trichlorethane, more usually known as "D.D.T.," has now a wide application as an insecticide and the general consensus of opinion is that, used with reasonable care, preparations containing D.D.T. do not present significant toxic hazards to human beings (Neal *et al.*, 1944; Cameron and Burgess, 1945). Nevertheless, Wigglesworth (1945) reports a case of presumed D.D.T.-intoxication in a laboratory worker after deliberate exposure, and Cameron and Burgess emphasize the possible danger to operators using D.D.T. in an oily solvent. The danger of D.D.T.-poisoning following the application of this substance in acetone is stressed by Taylor (1945), who reported fatal effects in rabbits after dressing with a 5% solution and marked toxic effects after dressing with a 0.5% solution. The incorporation of D.D.T. in paints and distempers has now become an established procedure, and the practice seems likely to be extended in the future, for such paints appear to be efficient in the control of infestation by house-flies (Campbell and West, 1944).

D.D.T. has been shown to be toxic to a variety of mammals including rabbits, guinea-pigs, rats (Draize, Nelson, and Calvery, 1944; Smith and Stohlman, 1944; Cameron and Burgess, 1945), cows, sheep, horses (Draize *et al.*, 1944), and cats (Lillie and Smith, 1944). The main pathological features seem to be liver damage of varying degree sometimes reaching the stage of necrosis, loss of weight, anorexia, mild anaemia with a reduction of the mean corpuscular haemoglobin, polymorphonuclear leucocytosis, and damage to the central nervous system, causing excitability, instability, tremors, and muscular weakness (Cameron and Burgess, 1945). No specific histological changes have been reported in the C.N.S., though various authors have noted some degeneration, vacuolation, pyknosis and tigrolysis of a few anterior horn cells in the thoracic and lumbar regions (Cameron and Burgess, 1945; Lillie and Smith, 1944; Smith and Stohlman, 1944).

In the one case of human intoxication to be found in the literature Wigglesworth (1945) reports heaviness and aching of the limbs, sleeplessness, "spasms of extreme nervous tension," prostration of such a degree as to confine the sufferer to bed for a fortnight, and involuntary muscular twitchings over the whole body on at least three occasions. Full recovery had not taken place at the end of the year. The victim had been exposed to concentrations of D.D.T. in acetone and in powder form far in excess of levels that might reasonably be met with in the routine use of the insecticide. This report of Wigglesworth's is of great importance in that it removes the question of human D.D.T. intoxication from the sphere of theoretical speculation to the realms of industrial medicine; for it is likely that a substance known to be toxic to mammals, shown to be toxic to man under certain conditions, and in wide use

produce subclinical manifestations, not at present recognized, which will lower the health-level and efficiency of workers at risk, and that the rapidly growing use of D.D.T. will extend into circumstances where human intoxication is likely to occur.

In view of this increasing use of the substance, and the repeated warnings of the dangers of toxic effects, it is felt that it is desirable to publish the following work, undertaken for Service reasons during the early part of this year. If the design of the experiment seems somewhat narrow, it should be realized that this is because an answer to a specific problem was wanted and many aspects had to be ignored.

The problem under investigation was the possible toxic effect of the use of a distemper containing 2% by weight of the dry film of D.D.T. in circumstances where the paint would be inevitably covered with a thin film of oil, the ambient temperature would be such that personnel at risk would be largely unclothed, their skin would be oily and sweaty, because of cramped accommodation large areas of oily skin would come into contact with the paint, and efficient washing of the body surface could take place only at relatively infrequent intervals. Any toxic effect manifested would be a serious matter, for not even the slightest lowering of efficiency of the personnel could be tolerated, and even the least functional damage to the C.N.S. would assume a serious aspect.

## Experimental

Two subjects were employed in this investigation: R.A.M.C., male, presumably healthy; and A.I., male, also presumably healthy. The desired environment was secured by using a steel chamber, octagonal in plan, six feet across and six feet high. A heater was installed, and a blower fan could be controlled from inside. A narrow steel seat ran round the inside of the chamber, and a small bench was installed, upon which the necessary manipulations could be performed during the sojourns. The chamber walls were distempered at first with a normal distemper and later with a similar distemper with the addition of D.D.T. An analysis of this distemper (dried film) is given in Table I. The surfaces were then covered with a thin film of lubricating oil. Two sojourns, each of 48 hours' duration, were made, with an interval of 48 hours between. On the first occasion the chamber was painted with the distemper without D.D.T., and on the second with the distemper containing D.D.T. Both subjects wore short trunks only, and were forced to sit so that a large skin area, chiefly of the back, was always in contact with the oily walls. It was found possible to sleep on the narrow seat, alternate watches being taken.

TABLE I.—*Analysis of D.D.T. Distemper*

| | |
|---|---|
| Water | 39% |
| Oil-modified phenolic resin | 10% |
| Siliceous matter (china clay), yellow ochre ($Fe_2O_3$), titanium dioxide | 49% |
| D.D.T. | 2% |

In addition the film contained very small quantities of a chlorinated phenol and a compound or substituent of ammonia as preservative and dispersing agents.

Carbon dioxide was absorbed by means of a protosorb canister, and air analyses showed that during both experiments the carbon dioxide content of the air did not rise above 1% and the oxygen content did not fall below 19%. The heater and blower were manipulated so that the temperature ranged between 25 and 30° C. dry bulb, and 24 and 28° C. wet bulb (relative humidity 88–94%), thus providing a high air temperature and high humidity.

The following observations were made:

Clinical neurological examination before the control experiment, after the control experiment and before the D.D.T. experiment, immediately after the D.D.T. experiment, and again 5 days after the conclusion of the experiment.

Electro-encephalograms were made at the same times.

Haematological examinations were made every 24 hours during both experiments and for the succeeding 5 days, and weekly thereafter up to 47 days. The criteria employed were erythrocyte counts; haemoglobin estimations, performed by the alkaline haematin method of Clegg and King (1942), the solutions being evaluated on a "Spekker" photo-electric absorptiometer and an Ilford "604" "spectral green" filter; reticulocyte count; siderocyte count, using a dipyridyl-thiocyanate staining technique (Case, 1944) and the inverse binomial sampling method (Haldane, 1945); leucocyte count and differential leucocyte count, using Leishman-stained preparations. From these data the mean corpuscular haemoglobin and the haemodynamic index (Case, 1945) were calculated.

Urine analyses were conducted before and after each experiment and at intervals during the succeeding days, and the blood pressure was recorded at similar times.

Careful notes were taken of any subjective phenomena observed. The results of these investigations are summarized in Tables II to VIII.

TABLE II.—*Haematological Data—Subject R.A.M.C.*

| | T. | R.B.C. | Hb | M.C.H. | S. | R. | H.I. | W.B.C. | Polys | Lymphs | M. | N.R. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Control | 0 | 4·70 | 14·8 | 31·7 | 4 | 16 | 4·0 | 6,000 | 3,600 | 1,680 | 0 | 0 |
| | 1 | 4·70 | 15·3 | 32·5 | 6 | 16 | 2·5 | 9,600 | 6,528 | 2,496 | 0 | 0 |
| | 2 | 4·67 | 14·9 | 31·9 | 6 | 20 | 3·3 | 6,700 | 3,350 | 2,680 | 0 | 0 |
| | 3 | 5·10 | 16·3 | 31·9 | 5 | 20 | 4·0 | 7,200 | 4,032 | 2,592 | 0 | 0 |
| | 4 | / | / | / | / | / | / | / | / | / | / | / |
| D.D.T. Experiment | 0 | 5·12 | 16·4 | 32·0 | 6 | 20 | 3·3 | 5,400 | 3,564 | 1,188 | 0 | 0 |
| | 1 | 5·11 | 14·9 | 29·2 | 20 | 30 | 1·5 | 6,900 | 4,692 | 1,794 | 0 | 0 |
| | 2 | 5·22 | 14·8 | 28·4 | 18 | 40 | 2·2 | 5,400 | 3,672 | 1,404 | 54 | 0 |
| | 3 | 5·16 | 14·8 | 28·7 | 16 | 30 | 1·9 | 5,700 | 2,850 | 2,622 | 228 | 1 |
| | 4 | 5·20 | 14·8 | 28·5 | 18 | 20 | 1·1 | 5,400 | 1,512 | 3,132 | 54 | 0 |
| | 5 | 5·18 | 14·9 | 28·8 | 20 | 30 | 1·5 | 6,300 | 1,890 | 3,528 | 0 | 0 |
| | 12 | 5·02 | 14·5 | 29·0 | 18 | 29 | 1·6 | 7,300 | 4,234 | 2,190 | 0 | 0 |
| | 19 | 5·10 | 15·3 | 30·0 | 12 | 24 | 2·0 | 6,900 | 2,898 | 3,450 | 0 | 0 |
| | 26 | 5·03 | 14·8 | 29·5 | 8 | 26 | 3·2 | 7,400 | 2,812 | 4,218 | 0 | 0 |
| | 33 | 5·12 | 16·0 | 31·3 | 6 | 24 | 4·0 | 7,700 | 2,772 | 4,620 | 0 | 0 |
| | 40 | 5·07 | 16·3 | 32·2 | 6 | 22 | 3·6 | 8,300 | 2,905 | 5,063 | 0 | 0 |
| | 47 | 5·10 | 16·4 | 32·1 | 8 | 30 | 3·5 | 8,400 | 2,856 | 5,208 | 0 | 0 |

T. = Time in days from start of experiment. Hb = Haemoglobin in grammes per cent. M.C.H. = Mean corpuscular haemoglobin in $\mu\mu$g. S. = Siderocytes per 1,000 red cells. R. = Reticulocytes per 1,000 red cells. H.I. = Haemodynamic index = Reticulocyte count/siderocyte count. W.B.C. = Leucocytes per c.mm. Polys = Neutrophil polymorphonuclear leucocytes per c.mm. Lymphs = Large and small lymphocytes per c.mm. M. = Myelocytes (Schilling haemogram) per c.mm. N.R. = Nucleated erythrocytes per 1,000 red cells. The diagonal stroke = No observation.

TABLE III.—*Haematological Data—Subject A.I.*

| | T. | R.B.C. | Hb | M.C.H. | S. | R. | H.I. | W.B.C. | Polys | Lymphs | M. | N.R. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Control | 0 | 5·06 | 15·2 | 30·0 | 6 | 18 | 3·0 | 6,600 | 4,290 | 1,980 | 0 | 0 |
| | 1 | 5·14 | 15·3 | 29·8 | 7 | 20 | 2·9 | 10,800 | 6,912 | 3,024 | 0 | 0 |
| | 2 | 5·30 | 15·6 | 29·5 | 6 | 16 | 2·5 | 6,400 | 4,096 | 1,920 | 0 | 0 |
| | 3 | 5·11 | 15·3 | 29·9 | 6 | 18 | 3·0 | 9,600 | 6,720 | 2,496 | 0 | 0 |
| | 4 | / | / | / | / | / | / | / | / | / | / | / |
| D.D.T. Experiment | 0 | 5·11 | 15·2 | 29·7 | 3 | 20 | 4·0 | 7,600 | 5,472 | 1,672 | 0 | 0 |
| | 1 | 5·25 | 14·9 | 28·4 | 16 | 32 | 2·0 | 8,400 | 5,040 | 3,024 | 0 | 0 |
| | 2 | 5·20 | 14·8 | 28·5 | 18 | 36 | 2·0 | 5,200 | 1,456 | 3,120 | 52 | 0 |
| | 3 | 5·20 | 14·5 | 27·9 | 18 | 30 | 1·9 | 4,200 | 1,680 | 2,688 | 126 | 0 |
| | 4 | 5·10 | 14·1 | 27·6 | 12 | 20 | 1·5 | 4,800 | 1,728 | 2,400 | 48 | 1 |
| | 5 | 5·23 | 14·4 | 27·5 | 16 | 21 | 1·3 | 7,500 | 2,850 | 3,900 | 0 | 2 |
| | 12 | 5·17 | 14·4 | 28·0 | 18 | 27 | 1·5 | 6,800 | 3,400 | 4,080 | 0 | 0 |
| | 19 | 5·22 | 14·8 | 28·5 | 10 | 22 | 2·2 | 9,400 | 4,324 | 5,170 | 0 | 0 |
| | 26 | 5·40 | 15·9 | 29·5 | 9 | 31 | 3·4 | 8,700 | 4,002 | 5,046 | 0 | 0 |
| | 33 | 5·47 | 16·4 | 30·1 | 6 | 18 | 3·0 | 7,500 | 4,050 | 3,225 | 0 | 0 |
| | 40 | 5·28 | 15·7 | 29·8 | 6 | 21 | 3·5 | 9,400 | 5,828 | 3,196 | 0 | 0 |
| | 47 | 6·38 | 16·0 | 29·8 | 7 | 34 | 4·9 | 12,000 | 8,880 | 2,880 | 0 | 0 |

TABLE IV.—*Blood Pressure*

| | Time in Days | Subject R.A.M.C. B/P (mm. Hg) | Subject A.I. B/P (mm. Hg) |
|---|---|---|---|
| Control | 0 | 125/85 | 115/65 |
| | 4 | 125/85 | 115/65 |
| D.D.T. | 3 | 104/90 | 75/50 |
| | 5 | 130/84 | 110/60 |
| | 47 | 125/85 | 110/68 |

Subject A.I. normally has a low diastolic pressure.

TABLE V.—*Urine Analysis*

| | Time in Days | Subject R.A.M.C. Alb. | R. sub. | K.b. | B.p. | I. | pH | Subject A.I. Alb. | R. sub. | K.b. | B.p. | I. | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Con. | 0 | – | – | – | – | – | 7·5 | tr. | – | – | – | – | 8·0 |
| | 3 | – | – | – | – | – | 6·0 | – | – | – | – | – | 6·0 |
| D.D.T. | 0 | – | – | – | – | – | 7·5 | – | – | – | – | – | 8·0 |
| | 3 | – | – | – | – | ++ | 5·5 | – | – | – | – | ++ | 4·5 |
| | 4 | – | – | – | – | ++ | 5·0 | – | – | – | – | ++ | 5·0 |
| | 5 | – | – | – | – | + | 5·0 | – | – | – | – | ++ | 5·0 |
| | 6 | / | / | / | / | tr. | / | / | / | / | / | + | / |
| | 7 | / | / | / | / | – | 7·0 | / | / | / | / | – | 7·5 |
| | 47 | – | – | – | – | – | 7·5 | – | – | – | – | – | 8·0 |

Alb. = Protein (albumin). R. sub. = Reducing substances (sugar). K.b. = Ketone bodies. B.p. = Bile pigments. I = Indoxyl sulphate (indican).

TABLE VI

| | Subject R.A.M.C. | | | |
|---|---|---|---|---|
| | Control | | After D.D.T. | |
| Time in Days: | 0 | 4 | 3 | 7 |
| Examination C. VIII | A.C. > B.C.; both Rinne = | A.C. > B.C.; both Rinne = | B.C. > A.C. rt. Rinne lt. A.C. rt. impaired | B.C. > A.C. rt. Rinne lt. A.C. rt. impaired |
| Supinators R | Present | Present | Diminished | Diminished |
| Supinators L | " | " | " | " |
| Knee-jerks R | " | " | Present | Present |
| Knee-jerks L | " | " | " | " |
| Ankle-jerks R | " | " | Weak | Weak |
| Ankle-jerks L | " | " | " | " |
| Abdominals .. | + \| + / + \| + | + \| + / + \| + | + \| + / + \| + | + \| + / + \| + |
| Cremasters R | Present | Feeble | Present | Very feeble |
| Cremasters L | " | " | " | " |
| Plantars R | ↓ | ↓ | Feeble | ? |
| Plantars L | ↓ | ↓ | " | ? |
| Sensation (cotton-wool) | Normal | Normal | Anaesthetic ulnar aspect rt. hand | Anaesthetic ulnar aspect rt. hand |
| Tremor: outstretched hands | None | None | Fine tremor | Fine tremor |

TABLE VII

| | Subject A.I. | | | |
|---|---|---|---|---|
| | Control | | After D.D.T. | |
| Time in Days: | 0 | 4 | 3 | 7 |
| Examination C. VIII .. | B.C. > A.C.; both Rinne = | A.C. > B.C.; both Rinne = | B.C. > A.C. rt. Rinne = ; A.C. rt. impaired | B.C. > A.C. rt. Rinne = |
| upinators R | Present | Present | Present | Diminished |
| upinators L | " | " | " | " |
| nee-jerks R | " | " | " ++ | " |
| nee-jerks L | " | " | " | " |
| Ankle-jerks R | " | " | " | " |
| Ankle-jerks L | " | " | " | " |
| Abdominals .. | + \| + / + \| + | + \| + / + \| + | + \| + / + \| + | + \| + / + \| + |
| Cremasters R | Present | Present | Present | All diminished |
| Cremasters L | " | " | " | Weak |
| Plantars R | ↓ | ↓ | ↓ | ↓ |
| Plantars L | ↓ | ↓ | ↓ | ↓ |
| Sensation (cotton-wool) | Normal | Normal | Normal | Normal |
| Tremor: outstretched hands | None | None | None | None |

TABLE VIII.—*Subjective Phenomena*

| | Time in Days | Subject R.A.M.C. | Subject A.I. |
|---|---|---|---|
| Control | 0 | None | None |
| | 1 | " | " |
| | 2 | " | " |
| | 3 | " | " |
| | 4 | " | " |
| D.D.T. | 1 | Smarting of eyes and sore throat (3 hours after entering chamber) | Smarting of eyes and sore throat |
| | 2 | Smarting of eyes. A transient period of "yellow vision" lasting 45 minutes | Smarting of eyes |
| | 3 | Smarting of eyes. A further period of "yellow vision" lasting 30 minutes. Feeling of tiredness, touchiness, and mental incapacity | Smarting of eyes. "Touchiness" |
| | 4 | Tiredness. A feeling of muscular incoordination and lack of concentration. An "apprehensive" mental state. Some "heaviness of limbs" | Tiredness. Lethargy with "apprehensive" mental state and "touchiness" |
| | 5 | Pain in limb muscles, feeling of inability to walk properly. Pain in left wrist and feeling of loss of extensor power. Extremely irritable, with marked mental incapacity | Tiredness and pains in limbs. General feeling of "illness" so marked that subject felt compelled to remain in bed. No obvious clinical signs |
| | 5–12 | Pains in limbs and especially left wrist persisted. Radiograph of wrist on 12th day: N.A.D. Fibrillation of both triceps brachii observed on three occasions during this period. A curious feeling when walking, as if the knees were bending backward, which became known as "goat-leg." This was most marked when ascending steps | Pains in limbs and right shoulder-joint. A general ill-defined malaise, with mental irritability and some mental incapacity |
| | 12–33 | The above symptoms persisted, gradually becoming less marked, during this period | Gradual improvement during this period |
| | 33–47 | None | None |

My colleague, Surg. Lieut. C. C. Evans, R.N.V.R., reports upon the electro-encephalograms as follows. "Electro-encephalograms were taken on both subjects at the following times: (1) 24/5/45—before starting experiment; (2) 28/4/45—after 48 hours in the chamber without D.D.T. paint; (3) 31/5/45—immediately after 48 hours' confinement with D.D.T. paint; (4) 5/6/45—5 days later. No alterations of any significance were observed between the successive records taken."

### Neurological Examination

The following were investigated: Cranial nerves, reflexes (biceps, supinators, knee-jerks, ankle-jerks, abdominals, cremasters, and plantars), motor power of limbs, sensation (pin-prick, cotton-wool, and vibration), joint position sense, dysdiadokokinesis, hand tremor, finger–nose test, and Rombergism. Tables VI and VII show only those tests where some abnormality was found in one or both subjects.

### Discussion

The protocols show that during the control period no measurable changes took place apart from a fall in *p*H in the urine. After exposure to D.D.T. distemper, however, various changes did occur. The most dramatic of these, as might be expected, were found among the subjective phenomena noticed. The smarting of the eyes was due to some lacrimatory substance given off by the paint, although 48 hours had been allowed for drying, with the chamber doors open and the blower on. This substance was most noticeable near the roof. Air from this area was frequently bubbled through silver nitrate solution and acid potassium chlorate–soluble starch solution, but no free HCl or chlorine was detected by the procedure. The vapour was slightly acid to litmus paper, so it was unlikely to have been the ammonia. The smell was reminiscent of dettol. I am of the opinion that this lacrimatory substance was more likely to have been the trace of chlorinated phenol added as a preservative than a product of the D.D.T., but the experiment afforded no direct evidence upon this point. The tiredness, heaviness, and aching of the limbs were very real things, and the mental state also was most distressing. Not only was a state of extreme irritability present, but also both subjects had a great distaste for work of any sort and a feeling of mental incompetence in tackling the simplest mental task. This mental incompetence was more apparent than real, for one of the subjects (R.A.M.C.) forced himself to undertake some mathematical calculations, and was able to perform them with normal precision. The joint pains were quite violent at times, and subject R.A.M.C. went to the length of having his wrist radiographed, even though it was thought extremely unlikely that any abnormal findings would be reported. Subject A.I. was so prostrated that he had to take to his bed for a day. He is far from being a hypochondriacal type, and in fact prides himself upon his ability to endure hardship and discomfort. No explanation is offered for the transitory "yellow vision," but again it seemed a very real thing at the time. On the whole these subjective findings tally well with the symptoms described by Wigglesworth (1945), and even in an attenuated form would be serious in Service personnel.

The neurological data are of interest in that they do show some slight evidence of measurable change—in the diminution of reflexes, the alteration in auditory acuity in both subjects, and in the patchy peripheral anaesthesia produced in one subject. The production of a fine tremor in one subject is also probably significant.

The urine analyses show a progressive fall of urinary *p*H, but this change also occurred to a smaller degree in the control experiment, and little diagnostic importance is attached to it. The appearance of a marked indicanuria is more likely to be significant, and it is of interest to notice that Stewart *et al.* (1945) consider this test to be of value in early T.N.T. poisoning.

The blood-pressure records are of considerable interest, since a marked transitory fall of systolic pressure was observed in both subjects, one of whom (A.I.) normally has a low diastolic pressure. No explanation is offered for this finding.

In the haematological investigations lay our main hope of finding useful criteria for following toxic change if it should occur, since haematological changes had been reported in mammals. Furthermore, haematological examinations are

practical means of assessing toxic damage of small degree in large groups of people, and if toxic effects were to be discovered it would become important to find a practicable diagnostic and prognostic index applicable to a population at risk.

The data show that shortly after exposure to D.D.T. there is a diminution of the mean corpuscular haemoglobin. This is a more accurate index than erythrocyte counts or haemoglobin estimations alone, since the figures are unaffected by changes of blood volume. A fall in M.C.H. was found in mammals by Cameron and Burgess (1945) and also in early T.N.T.-poisoning by Stewart *et al.* (1945). The change occurs so rapidly that it cannot be due to a formation of hypochromic cells in the bone-marrow, so that the red cells must lose haemoglobin. The mechanism by which this occurs is almost certainly an intracorpuscular degradation, the later stages of which are shown by the appearance of stainable non-haematin iron within the cell (Case, 1943, 1945a). If this is so, then some of these cells (siderocytes) should be found in the circulation in excess of normal levels (0.5% ± 0.25%: Case, Ladan, and Nutt, 1945). The siderocyte figures show that this is indeed the case, and suggest that the siderocyte level might be an extremely useful index. This index is already employed in the control of lead-poisoning (Case, 1945; Case, Scott, Scott, and Woolf, unpublished work). The reticulocytes also show a rise, and although the haemodynamic index (Case, 1945) shows a depression followed by a return to normality, it still lies between its normal values of 1–5. This index is an expression of the dynamic activity of the erythron, and while the index is in the range of normality a progressive haemolytic condition need not be feared.

The changes in the white cell counts are at variance with the findings of Cameron and Burgess (1945), who considered that a rise in white cell count with an absolute polymorphonuclear leucocytosis might be a sign of diagnostic importance. In our two cases there was no significant change in the leucocyte count, but after exposure to D.D.T. there was a transitory polymorphonuclear leucopenia and an increase of lymphocytes. In one subject (A. I.) this was followed by a leucocytosis and polymorphonuclear leucocytosis. In the other subject a lymphocytosis persisted throughout the period of observation. This may be due to the fact that this man had suffered from infective mononucleosis three years ago, and since then has had a tendency to time-lag in recovery from induced polymorphonuclear leucopenia.

On the third day after exposure, at a time corresponding to the polymorphonuclear leucopenia, small numbers of immature granulocytes (myelocytes in the Schilling haemogram classification) appeared, but their incidence lasted for three days only. At about the same time occasional nucleated red cells could be found in the blood films.

With the exception of the leucocyte curves, the response of both subjects was of an essentially similar nature, and by the 26th day a return to the original limits was reached for most of the haematological criteria employed.

### Conclusions

This work shows that under certain conditions a preparation containing 2% of D.D.T. may, in the presence of oil, constitute a serious hazard to men at risk. The work also suggests that haematological examinations, employing siderocyte levels; haemoglobin and red cell estimations; reticulocyte counts and leucocyte counts, and also urinary indoxyl sulphate estimations might all be useful tests in the prevention or early diagnosis of D.D.T. intoxication.

It should be stressed that these experiments only show D.D.T. distemper to be toxic under special conditions, possibly rather more severe than would obtain in practice, and do not form the basis for any condemnation of the widespread use of D.D.T. if proper precautions are taken, particularly in the avoidance of oil contamination. They do, however, emphasize that D.D.T. intoxication in human beings is a hazard to be considered and guarded against.

### Summary

Exposure of two subjects for 48 hours under special conditions (oily surface, large skin areas exposed, high ambient temperature, and relative humidity) produced definite toxic effects, including an increase of erythrocyte destruction (siderocytosis), a decrease in the mean corpuscular haemoglobin, an increase in reticulocytes, a slight fall in haemodynamic index, a diminution of polymorphonuclear neutrophil leucocytes accompanied by the appearance of immature white cells, the appearance of indoxyl sulphate in the urine, tiredness, heaviness, and aching of the limbs, diminution of some reflexes, unilateral slight impairment of hearing, transient "yellow vision" (one subject), muscular fibrillation (one subject), peripheral patchy anaesthesia (one subject), weakness of the legs, and a curious apprehensive mental state. A return to normality took between 26 and 33 days.

The significance of these findings is discussed, the relative merits of the examinations used are considered in relation to the control of D.D.T. intoxication, and the danger of D.D.T. in the presence of oil is emphasized.

I should like to take this opportunity of expressing my appreciation of the co-operation received from my colleagues, and wish to thank Mr. H. V. Hempleman, B.A., for the gas and urine analyses; Surg. Lieut. C. C. Evans, R.N.V.R., for the neurological examinations and electro-encephalograms; the radiologist, Surg. Cmdr. D. A. Inire, R.N.V.R., R.N. Hospital, Haslar, for the *x*-ray examination; and most particularly my technician L.S.B.A. A. Ireland, for his cheerful collaboration as an experimental animal and his careful and conscientious examination of material.

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## A FATAL CASE OF D.D.T. POISONING IN A CHILD

### WITH AN ACCOUNT OF TWO ACCIDENTAL DEATHS IN DOGS

BY

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We record what is probably the first fatal case of D.D.T. poisoning in man. In addition we describe the death of two dogs following skin-absorption of that substance. The toxicity of D.D.T. has been studied in human beings by Cameron and Burgess (1945) and Draize *et al.* (1944) by means of skin-application tests, and Neal *et al.* (1944) by means of mists and aerosols. Wigglesworth (1945) has described the toxic reactions to absorption through the skin in one human case.

### D.D.T. Poisoning in a Child

*History.*—On Aug. 22, 1945, at 11 a.m., a child aged 1 year 7 months, the son of a West African soldier, found a bottle of 5% D.D.T. in kerosene and drank about 1 oz. Within 10 minutes he began to cough and vomit violently, whereupon he was given palm-oil by the neighbours. In a short while coughing and vomiting ceased, but his general condition worsened, and at about 12.30 p.m. he became comatose and had convulsions, which, so far as can be ascertained, consisted of generalized fine tremors. At about 1.30 p.m. he was taken to a near-by M.I. room, where he was seen by Capt. R. N. Johnston, R.A.M.C., who gives the following account: "The child was comatose and collapsed, with no perceptible pulse, and had froth at the mouth. Atropine 1/400 gr. was given and the stomach washed out, the stomach washing proving to be a yellow pultaceous mass of pawpaw (native fruit). No smell of kerosene was detected. Artificial respiration was given, but the child died at 3 p.m. (4 hours after drinking the D.D.T.)." Luckily, the bottle of D.D.T. was found shortly after the mishap, and the amount of D.D.T. ingested was fairly accurately deduced. It proved to be about 1 fl. oz. The 5% D.D.T. was made up of crude D.D.T. (100% commercially pure, setting point 100°) and crude kerosene.

*Post-mortem Examination.*—(Aug. 22, two hours after death.) The body of a well-nourished African child weighing 10 kg.; rigor mortis in lower jaw; froth at nostrils and mouth. Meninges: Excessive fluid in subarachnoid space. Brain: Congested, soft, and oedematous. Spinal cord: Normal. Thyroid and thymus: Normal. Trachea: Slight amount of froth and yellow vomit (pawpaw). Lungs: Pale, firm, oedematous, with one or two haemorrhagic areas. Heart: Slight excess of fluid in pericardial sac; otherwise normal. Stomach: Wall normal; contained pawpaw smelling faintly of kerosene. Small and large intestines: Normal. Pancreas: Normal. Liver: Congested, otherwise normal. Spleen: Twice normal size; on sectioning, cut surface was chocolate in colour, with well-marked raised grey Malpighian bodies. Kidneys and suprarenals: Normal. Sternal bone marrow: Normal. Cause of death: Pulmonary oedema.

*Histology.*—Frozen sections were stained with Fett-Ponceau Sudan IV, and paraffin sections with haematoxylin and eosin. Liver: Congested; cloudy swelling of hepatic cells; sinusoids dilated, contained fibrin, R.B.C.s, and a moderate number of leucocytes; some periportal leucocytic infiltration. Kidneys: Patchy congestion, glomeruli and tubules normal. Lungs: Alveolar oedema, with a few areas of alveolar haemorrhage and infiltration with polymorphs. Heart muscle: Interstitial oedema, with a mild interstitial inflammatory reaction. Spleen: Congested; Malpighian bodies large and showing many endothelial cells. Suprarenals: Normal. Stomach, caecum and ileum, thyroid and parathyroid: Normal. Pancreas: Cloudy swelling. Cerebrum, cerebellum, pons, and spinal cord: Normal. (No special staining for nervous tissue other than H. & E. and Sudan IV.)

At first there was some doubt as to whether death was due to D.D.T. or to the kerosene. To decide this the following experiments were carried out.

### Experiment I

Two baboons, weighing 7 lb. (3.2 kg.) each, were selected, and the first was given 15 c.cm. of 5% D.D.T. in kerosene and the second 15 c.cm. of kerosene alone, by stomach tube. Within half an hour the first monkey became quiet, had ruffled hair, and was obviously ill. At two hours he had recovered, and appeared well 28 days later. The second monkey was unaffected.

### Experiment II

To a baboon weighing 7 lb. (3.2 kg.) 30 c.cm. of 5% D.D.T. in kerosene, and to another weighing 6 lb. (2.7 kg.) 25 c.cm. of kerosene, were given by stomach tube. Within a quarter of an hour the former monkey had lost the use of his hind legs and was seen dragging himself with his fore-limbs. Convulsions developed, and there were fine tremors of the muscles of the legs, tail, and back. After one hour he died, with bloody, frothy fluid at the mouth and nares, cessation of respiration occurring while the heart was still beating. The second monkey was unaffected, and was alive and well 20 days afterwards.

*Necropsy.*—(Immediately after death.) Trachea: Contained small amount of frothy haemorrhagic fluid. Lungs: Showed massive haemorrhages with a small amount of oedema. Stomach: Distended with a pultaceous mass of half-digested peanuts smelling of kerosene; mucosa normal. Large and small intestines, liver, spleen, kidneys, suprarenals, pancreas, heart, and brain presented no abnormality.

*Histology.*—Liver: Hepatic cells showed cloudy swelling; dilated sinusoids containing fibrin; no leucocytic reaction other than a small amount of periportal small round-cell infiltration. Kidneys: Glomeruli congested; blood in capsular space; tubules showed cloudy swelling and granular degeneration with commencing disintegration of epithelium into lumen; many tubules contained blood casts. Lungs: Alveolar haemorrhage and oedema. Heart muscle: Normal. Spleen: Well-marked Malpighian bodies; normal. Stomach, caecum and ileum, pancreas, suprarenals, cerebrum, cerebellum, pons, and spinal cord: Normal. (No special nervous tissue stain used other than H. & E. and Sudan IV.) Cause of death: Pulmonary oedema and haemorrhage, following gastric administration of D.D.T. in kerosene.

### D.D.T. Poisoning in Two Dogs

Two bull-terriers suffering from demodex eczema, with skins denuded of hair and ulcerated, were sprayed once with 5% D.D.T. in kerosene. Both dogs subsequently became very ill and lost appetite and weight, dying from exhaustion about two months later. Trypanosomes (*congolense*) were found in the blood of one dog immediately before death. No necropsy was performed on this animal.

*Histology.*—Liver: Widespread focal and centrolobular necrosis; the necrotic zones had many areas of calcification. Liver cells outside the necrotic zones showed cloudy swelling and fatty degeneration. No obvious leucocytic infiltration periportall or in the necrotic areas. Some liver-cell regeneration, but no fibrosis around the damaged areas. Kidneys: Congested; glomeruli engorged and in some cases showing early hyalinization; marked tubular degeneration; all elements of the tubules were affected with cloudy swelling, fatty degeneration, colloid droplet formation with disintegration of the epithelium into the lumen; some tubules showed calcification; many casts. (Some of the R.B.C.s looked sickled.) Lungs: Oedematous, with areas of alveolar haemorrhage and leucocytic (mononuclear) infiltration. Spleen: Congested and presenting areas of haemorrhage; the Malpighian bodies showed proliferation of the endothelial cells, which contained pigment. Brain: (hippocampus) vessels engorged; no cuffing; no Negri bodies.

### Discussion

The experiments on monkeys show that the cause of death in the child was due to D.D.T. rather than to the kerosene. A fairly accurate estimate of the toxic dose for a child can be arrived at. About 30 c.cm. of 5% D.D.T. solution was ingested by a child weighing 10 kg., which suggests a *lethal dose of about 150 mg./kg.* body-weight.

Smith and Stohlman (1944) gave a 1 to 5% solution of D.D.T. in olive oil by stomach tube to rats and rabbits, and assessed the L.D. 50's as 150 and 300 mg./kg. respectively. Woodard *et al.* (1944), using D.D.T. dissolved in corn-oil administered by mouth in one single dose, found that the approximate M.L.D. was: rats, 200; mice, 400–500; rabbits, 400 or over; and guinea-pigs, 250–600 mg. per kg. The lethal dose in our experimental monkeys proved to be more than 236 mg./kg. and less than 472 mg./kg. From this and the other experiments quoted above it would seem that the human subject is more sensitive to D.D.T. than the animal when the insecticide is dissolved in an organic solvent and ingested by mouth. In the case of the two dogs the toxic dose was not ascertained, but the cases are a reminder that D.D.T. dissolved in organic solvents appears to be easily absorbed through the skin and may prove dangerous (Draize *et al.*, 1944; Cameron and Burgess, 1945), though there seems little danger from the use of the powdered form or watery suspension. It is, moreover, noted that the two dogs had only one application of D.D.T. in kerosene, producing a similar finding to that of Taylor (1945), who reports the toxic effects of D.D.T. in acetone after one application to the skin of rabbits.

The symptomatology agrees with that described by various workers with a variety of animals. The child became comatose after a short lapse of time, but hearsay evidence suggests that at one period he had developed fine tremors. Fine tremors were also seen in the monkey, associated with loss of power of the hind limbs—a sign which has been observed by almost all authors in their animal experiments. The dogs showed the signs of chronic poisoning, consisting of loss of appetite and weight and poor health. Death in both the child and the monkey was due to respiratory failure, but in the case of the two dogs it was the result of chronic toxaemia leading to liver and kidney damage. Both the child and the monkey died rapidly, and therefore one would expect little damage to be apparent histologically. The dogs showed marked centrolobular necrosis of the liver and tubular degeneration of the kidneys, both with calcification, which is in accordance with the findings of Cameron and Burgess (1945) in their animal experiments. It should be noted, however, that the animals died two months after one application of D.D.T. in kerosene, whereas in other animal experiments chronic poisoning was induced by repeated daily skin applications. This therefore suggests that the dogs received a very severe initial injury to liver and kidneys, which subsequently progressed to a fatal termination. That this is not always the case is perhaps shown in Wigglesworth's (1945) human case of chronic poisoning from skin absorption of D.D.T. in acetone, in which the patient ultimately recovered. It has also been shown in animal experiments by Cameron and Burgess (1945) that when recovery takes place it does so without any subsequent demonstrable liver lesion.

### Summary

The clinical and pathological aspects of a fatal case of poisoning in a child after ingestion of D.D.T. are described.

Death was due to pulmonary oedema, probably from paralysis of the respiratory centre.

The lethal dose was approximately 150 mg./kg. body-weight of commercially pure D.D.T.—an amount somewhat less than that found for experimental animals.

Two fatal cases of chronic D.D.T. poisoning in dogs are described, with a histological picture of centrolobular necrosis of liver and tubular degeneration of kidney with marked calcification.

We wish to express our thanks to Prof. G. R. Cameron, University College Hospital, for his advice on writing this paper and for assistance with the histology of our material.

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# OBSERVATIONS ON KERATOCONJUNCTIVITIS

## (CASES SEEN IN MILITARY HOSPITALS)

BY

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This paper concerns 42 cases of keratoconjunctivitis seen in various military hospitals between Oct., 1943, and Feb., 1945. Details of the clinical features, investigations, course, and treatment are recorded; an endeavour has been made to demonstrate a dental or an ear, nose, or throat toxic focus as a causal factor in a portion of the cases.

### Clinical Features

*Previous Attacks.*—Four patients reported earlier attacks in one or both eyes; the number would probably have been higher with further questioning, but care was taken to exclude previous attacks of other external ocular diseases with similar symptoms.

*Onset.*—The onset was usually acute, with lacrimation, photophobia, blepharospasm, and conjunctival discharge. Sometimes it coincided with another disease—e.g., malaria, tonsillitis, antritis. Disturbance of vision was unusual.

*Lesion.*—A varying degree of involvement of the cornea occurred in every case. With simple conjunctivitis there may be oedema of the epithelium and Bowman's membrane. Although such oedema sometimes occurred, it was typical of the cases under review to find punctate marginal corneal lesions. These varied from a spot just visible to the naked eye to one which was 1 mm. in diameter. They were commonly 1 to 2 mm. from the limbus, but could be up to 3 mm. away. They involved the epithelium, Bowman's membrane, and the superficial layers of the substantia propria. Loss of epithelium with the formation of shallow ulcers did occur, but this was unusual. Phlyctenular keratoconjunctivitis, superficial punctate keratitis, and conjunctivitis with marginal corneal ulcers should not be confused with this condition. Cases of keratitis with lesions scattered over the cornea were similar, and the dividing lines between such a keratitis, conjunctivitis with marginal ulcers, and cases of keratoconjunctivitis were difficult, if not impossible, to draw; the conjunctival discharge in the early stages and the lack of visual disturbances were distinguishing features. Both eyes were affected in four cases.

*Associated Lesions.*—Six cases had associated blepharitis, and skin conditions such as impetigo, external otitis, and dermatitis of face also occurred.

### Investigations

*Pathological Tests.*—The white blood count varied between 9,850 and 13,000 per c.mm., with some increase in the polymorphs. The blood sedimentation rate was usually normal, and rarely rose above 4. Cultures from the conjunctival sac were sterile as a rule, but streptococci and staphylococci have occasionally been grown. It was noticeable what different results were obtained from different laboratories. I have discussed this with several pathologists, and it seems that certain points in connexion with conjunctival swabs should be emphasized. The swab may contain few organisms; it soon becomes dry and the organisms may get chilled and die. In taking the swab excess of tears should be removed, and the stick should be given a twist as the swab passes along the lower fornix. A culture plate should be inoculated and placed in the incubator at the earliest possible moment. Attention to these points should give the organisms the best opportunity to survive and grow.

*E.N.T. Examination.*—All cases were examined to exclude any ear, nose, or throat focus or sepsis. If such was discovered the next step was to decide what, if any, relation it had to the eye condition. In 17 cases some kind of toxic focus was found. These consisted of tonsillar infection (12 cases), antral infection (1 case), laryngitis (1 case), myringitis (1 case), and rhinitis (2 cases. In some of these, other parts were simultaneously inflamed to a mild degree—e.g., a subacute rhinitis with a septic tonsil. Tonsillar infection was not only present with obviously septic tonsils but, to an equal degree of importance, with small flat tonsils, tonsils which looked normal but from which pus could be expressed, and tonsillar remnants after a previous tonsillectomy; but if the patient had had recurrent attacks of keratoconjunctivitis, or attacks following tonsillitis, then, in the absence of another toxic focus, tonsillectomy was seriously considered. A controversial point should be mentioned here—the existence or otherwise of a quiet sinusitis, with neither symptoms nor positive findings, and a normal *x*-ray appearance. It is possible that such does occur, and, if so, it is relevant to this discussion as a possible toxic focus. Also, at times when *x*-ray facilities were limited, an ethmoidal or sphenoidal infection could not be definitely excluded.

*Dental Examination.*—All cases were examined to exclude a possible dental focus of sepsis. The following conditions were suspicious on clinical examination and confirmed by radiographs: (1) chronic pyorrhoea, with associated pus formation around tooth roots; (2) chronic granuloma, with or without a discharging sinus; (3) chronic sclerosis of tooth roots and surrounding bone, found in association with root fillings and heavily filled teeth. A mouth was often apparently healthy but on radiographic examination revealed hidden sepsis—e.g.: (1) a tooth root remaining after extractions—these often had apices projecting into the antrum; (2) granuloma of tooth root; (3) common dental cyst. The upper premolar and first molar teeth probably caused most of the trouble, their slender roots often extending to the antral floor. Eleven cases had dental lesions severe enough to be, in each case, a likely focus; 2 other cases needed dental treatment other than fillings of cavities, but simultaneously each had an E.N.T. focus which was considered a more probable cause. No cases of severe dental caries were seen, and mouths only needing odd fillings were not suspected; similarly, a limited degree of pyorrhoea did not cause trouble.

### Treatment

Proflavine lotion 1/2000, penicillin drops (1000 units to 1 c.cm.), penicillin cream (500 units to 1 g.), pencillin powder, 10% protargol, 20% argyrol, 1/2000 and 1/1000 proflavine, 1/8% zinc sulphate, 1/2% atropine drops (in severe cases), painting the lids with 1% silver nitrate, hot bathings, have all been used. Although it seemed that the conjunctival discharge subsided more quickly with treatment, none of these drugs appeared to have any noticeable effect in shortening the course of the malady. When the cornea is much involved atropine helps to relieve pain and hasten resolution.

### Course of the Disease

The duration varied between 3 and 64 days, with a mean of 16.8 days. Conjunctival discharge was usually present for 2 to 8 days, leaving hyperaemia only. This hyperaemia remained while the cornea continued to be inflamed, and traces could be seen for some time after. The corneal lesions were replaced by minute nebulae or disappeared altogether.

Several patients underwent tonsillectomy, and in some cases the eye condition showed an immediate improvement, and subsided more quickly than in the ordinary course of the disease. Occasionally there was an exacerbation of the ocular inflammation—possibly an allergic manifestation from a bacteriaemia; blepharitis also occurred after tonsillectomy. Similar improvement and occasional exacerbations were noticed after dental treatment—e.g., extraction of tooth root, dental extractions for apical abscess or pyorrhoea.

### Conclusions

A scientific paper written under active service conditions must often be incomplete. The lack of a slit-lamp for corneal examination was keenly felt, colleagues for special examinations and laboratory facilities were not always available, cases could not

be followed up for more than a brief period, the clinical entity of the disease is not always easy to recognize, and a reference library is not available. A noticeable proportion of the patients had an ear, nose, or throat toxic focus, 40% of sufficient severity to be suspected as the cause, and a similar proportion (26%) had a dental focus.

Final proof as to the cause could not be obtained, but the results were striking enough to justify investigation and treatment of toxic foci in all cases of the disease. If such is not done, it is probable that many cases will be insufficiently treated and may relapse, causing an unnecessary wastage of man-power from the need for further in-patient treatment. A possible cause having been found, it is not always a simple matter to decide how much mischief it is causing, and whether it needs drastic treatment, or any treatment at all.

My thanks are due to Capt. A. Smith, A.D. Corps, for his valuable co-operation on the dental aspect of the subject.

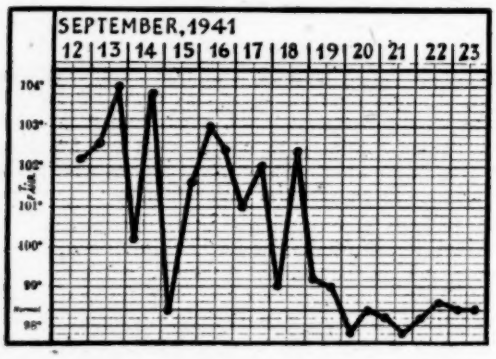
# Medical Memoranda

## A Case of Tick Typhus in the Sudan

Below is the history of the first case of tick typhus to be reported in the Sudan.

### CASE REPORT

The patient, an English school-teacher aged 32, was admitted to Juba Civil Hospital on Sept. 16, 1941, complaining of fever and frontal headache of 7 days' duration. He was in good health until the evening of Sept. 9, when after a somewhat busy day he felt "rather weary and a trifle under the weather." On Sept. 10 he motored 100 miles over a bad road, and that night slept badly, awakening next day with a slight headache, but was still able to carry on with his work of inspecting bush schools. That evening he had abdominal pain and slight diarrhoea, and spent another restless and disturbed night. On the 12th he still felt ill, but was able to do his work. At the end of the day he felt "dead beat and really rotten." He took his own temperature at 8 a.m., and found it to be just over 102° F. On Sept. 13 the morning temperature was 103.6° F., and he felt too ill to leave his bed. He was seen by a doctor, who diagnosed malaria and treated him with mepacrine; the blood film was, however, negative. On the 14th and 15th he felt much the same, and on the 16th was transferred to Juba Civil Hospital. On arrival (11 a.m.) his temperature was 103° F., pulse rate 64, and respiration rate 21. He looked well nourished and had a sallow complexion (normal for the patient), but was obviously ill. The skin of both forearms, anteriorly and posteriorly, was covered with a dull pink maculo-papular rash, some of the papules showing vesication. The rash was also present on the trunk and abdomen, but was much more scanty; it was not present on the face. The macules faded on pressure. The rash was first noticed by the patient that day. Below the right internal malleolus was a small sore (tache noire) about 2 cm. in diameter, covered with a thin scale; this was first noticed about the end of August, and had been dressed by the patient himself, who thought it was probably a




mosquito bite. Both tonsils were slightly injected, there was conjunctivits, and the patient seemed to be a little deaf. He had been constipated for two days.

A clinical diagnosis of typhus fever was made and mepacrine treatment was stopped. This diagnosis was confirmed by the pathological report received on Sept. 24. The blood culture was negative, but the Weil-Felix reaction was positive OX2 1 in 500, OX19 negative—a report diagnostic of African tick typhus. On the 17th and 18th his condition showed slight improvement, but he felt very tired and worn out. The rash now began to fade On the evening of the 19th his temperature fell to 99° F. and was normal next morning. The pulse rate was never above 76, and was relatively slow for the degree of pyrexia—e.g., when the temperature was 103° F. the pulse rate was only 64. During the next fortnight he felt very weak and tired, but subsequent to returning to his home in Yei, on Oct. 3, he made a rapid and complete recovery.

The diagnosis was suggested to me by the typical appearance of the rash and the sore on the ankle, and was confirmed by the Weil-Felix reaction.

### COMMENT

It is impossible to say where the patient acquired the disease, as he was on tour when he fell ill. He remembers being bitten on the ankle by an insect in Yei about the end of August; he also thinks he may have been bitten while staying in Juba on Sept. 4 and 5; after that time until his illness he was on tour on the east bank of the Nile, and sometimes had to walk through long grass, in which he might have collected a tick.

The main interest in the case is that it suggests tick typhus as a possible cause of some of the cases of undiagnosed pyrexia which are admitted to hospitals in this province, and emphasizes the importance of carrying out the Weil-Felix test in cases of pyrexia in which the diagnosis is in doubt. The diagnosis would probably not have been made had the disease occurred in a native of the Sudan; the rash would have been missed, and the case would have been called "clinical malaria" or "P.U.O."

My thanks are due to the Director, S.M.S., for permission to publish this case, and to Drs. Horgan and Kirk for the pathological findings and interpretation.

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## Ligature of Anterior Ethmoidal Artery for Arrest of Profuse Epistaxis

The case recorded below may be of interest as an unusual exercise in applied anatomy. For the arrest of profuse and intractable epistaxis, arterial ligature is occasionally indicated, and the great importance of the branches of the external carotid artery in the supply of the nasal cavity should not blind one to the fact that the upper and more inaccessible part of the cavity draws its arterial blood from the internal carotid by way of the anterior ethmoidal and its smaller companion, the posterior ethmoidal artery. For further amplification of these and other anatomical points I would refer to the instructive article by E. D. D. Davis (1939), which gave me the necessary inspiration to cope with this difficult case.

### CASE HISTORY

On April 9, 1945, a man aged 44 was admitted for epistaxis. The bleeding had been severe and had lasted for five days. He had been admitted to another hospital, where the nose had been repeatedly packed and various styptics applied. A transfusion of two pints of blood had also been given. As the bleeding was not arrested he was transferred to this hospital.

On admission, though the patient looked pale and distressed, the bleeding had stopped. His haemoglobin was found to be 38%. The stale and offensive packing was removed from the right nostril. The nose was cocainized, and anterior rhinoscopy revealed a granular and inflamed mucous membrane, with many small abrasions, presumably the result of previous attempts at haemostasis. One small bleeding spot in the floor of the nose was touched with the cautery, though subsequent events showed that this was not the real source of the trouble. The nose was left unpacked, and two pints of blood were transfused.

No further bleeding was seen till four days later, when a copious flow occurred from the right nostril. This was controlled temporarily by firm packing with ribbon gauze soaked in liquid paraffin. Further severe bleeding followed an attempt, a few hours later, to remove the pack and deal locally with the source. The patient now showed all the signs of a severe loss of blood, and a fatal termination appeared imminent. A transfusion was begun and was maintained for 18 hours, five pints of blood being given. Under local analgesia, the bifurcation of the right common carotid was exposed, and the external carotid artery was doubly ligatured close above the origin of the superior thyroid artery. At the same time a loop of catgut was placed loosely round the internal carotid artery and the ends were brought out through the lips of the cervical skin incision, which was sutured. This catgut loop was not tied, and in no way obstructed the flow of blood through the internal carotid, but traction on the loop would act as a temporary ligature if the need should arise.

For two days the patient made good progress, but on the morning of the third day further severe epistaxis occurred from the right nostril. Gentle traction on the catgut loop stopped the bleeding at once. On releasing the tension on the loop, blood could be seen to well from the upper recesses of the right nasal cavity. With sufficient gentle traction maintained to stop the bleeding temporarily the anterior ethmoidal artery was tied through an incision on

inner side of the orbit. This procedure, carried out under local analgesia, presented no difficulty, as it is a regular part of the commonly practised Ferris-Smith ethmoidal exenteration. Transfusion of another two pints was given.

No further epistaxis occurred. Four days after this second operation his haemoglobin had risen to 40%, and on his discharge from hospital on May 14 it had reached 70%. He has since remained free from nose-bleeding.

No cause could be found for the bleeding. There was no history of injury, and no local lesion or growth in the nasal cavity or in the nasal sinuses could be found. His blood pressure had never risen above 130/80, and an exhaustive examination of the blood showed no abnormality beyond anaemia and a slight polymorphonuclear leucocytosis, occasioned by the loss of blood: both have now returned to normal.

Selly Oak Hospital, Birmingham. PHILIP READING, M.S., F.R.C.S.

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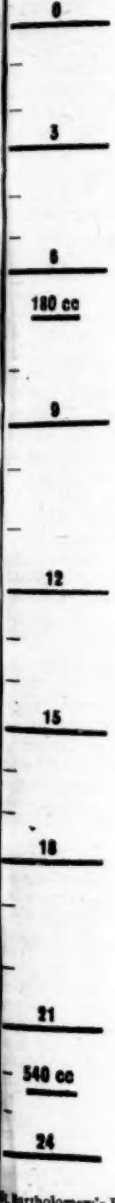
## Administration of Penicillin by Intramuscular Drip




The use of the intramuscular route for the continuous infusion of penicillin (Morgan, Christie, and Roxburgh, 1944) has proved to be of value as an alternative method of administration in patients who cannot tolerate intermittent intramuscular injection. The amount of fluid that can be absorbed readily by a muscle in 24 hours is one pint or less, and in June of last year the need arose for a simple method of administration which did not require special equipment or experience. A description of the technique outlined below was therefore circulated by the Penicillin Clinical Trials Committee of the Medical Research Council to all hospitals likely to receive battle casualties. Many thousands of the graduated labels have been issued, and we understand that their use is still recommended in the Army. The method has several advantages over those which require special equipment (McAdam, Duguid, and Challinor, 1944; and Hill, 1944). Its simplicity is its main asset.

The graduated scale (as shown in the illustration), which is printed on gummed paper or copied on sticking-plaster, is attached to the standard E.M.S. transfusion bottle so that the 180 c.cm. and 540 c.cm. marks correspond with those on the bottle. A 24-hours supply of penicillin is dissolved in 540 c.cm. of sterile normal saline, and the drip set up in the usual way at 8 to 12 drops a minute. The needle is inserted diagonally into the lateral aspect of the thigh, secured with sticking-plaster and covered with a sterile dressing. The fluid level should be inspected every hour or so, and should correspond with the appropriate mark on the scale; if it does not, the drip should be adjusted.

No special claims are put forward for this method of administration. Its merits lie in simplicity and cheapness. The disadvantage of the method is that 540 c.cm. of fluid are given as an infusion every 24 hours. This can be reduced by putting two days' supply of penicillin into the bottle and doubling the time scale, thus making a pint last 48 hours. Using this method we have not failed to obtain an adequate blood concentration of penicillin.

These labels may be obtained from Messrs. A. Richardson, Ltd., 5, High Street, St. Albans. Alternatively the figure, which is reproduced full size, may be copied on sticking-plaster.

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# Reviews

## TECHNIQUE IN TRAUMA

*Technique in Trauma. Planned Timing in the Treatment of Wounds, including Burns.* By Fraser B. Gurd, M.D., C.M., and F. Douglas Ackman, M.D., C.M. (Pp. 68; illustrated. 15s.) London: William Heinemann Medical Books. 1945.

This monograph from the Montreal General Hospital is made up of three articles and a summary. The first two deal with burns, and the third with wounds in general. This last section is in accordance with principles generally accepted in this country but, being written before penicillin was generally available, it is now in need of elaboration.

The sections on burns are well documented, and the modesty of the writing is particularly attractive after the rather polemical views put forward by advocates of different methods of treatment in the past. The authors advocate a special organization for treatment of burns which would have the support of anyone who has had to take charge of these cases. It need be neither large nor elaborate. Infrequent dressing, after cleansing, with sulphathiazole emulsion, followed by early grafting, is the keynote of their local treatment. The full case records are of special interest in so far as the patients were civilians, and most of them came for treatment early without the long gap imposed by wartime transfers of casualties. It is encouraging to read of the high degree of success achieved.

This monograph is well worth reading because of its detail, its honesty, and the self-criticism which the authors have included. It is strictly practical, and the experienced can appreciate difficulties described and overcome and learn something new, while any who have only a limited experience in the treatment of burns can use the details as a safe guide.

## DISEASES IN THE TROPICS

*Diagnosis and Treatment of Diseases in the Tropics.* By H. C. Trowell, M.D., F.R.C.P. Second edition. Bailliè're's Medical Manuals for Africans. (Pp. 219; illustrated. 4s.) London: Baillière, Tindall and Cox. 1945.

The second edition of this handbook incorporates several important additions and changes necessitated by recent advances of knowledge since the first edition was published. The chief of these concern the use of the sulphonamide drugs, while a new chapter on diets and malnutrition has been added. The object of the book, according to the author, is to acquaint African nursing orderlies and dressers with those aspects of medical and surgical disease which must be understood for nursing to become intelligent. He has largely succeeded in this endeavour, producing a small concise book, clearly written, and covering most of the simpler and more practical aspects of disease as encountered by the dresser in tropical Africa. It is more than a pity, therefore, that a number of errors and loosely expressed ideas have been allowed to spoil the work. For example, heart disease is stated often to produce pain under the praecordium—an erroneous idea which, if disseminated to patients, may result in much mistaken distress; the gonococcus is stated to be peculiar in that it can only produce inflammation in the urethra, conjunctiva, and joints, though it must be admitted the author later discusses gonococcal cervicitis and salpingitis; the ambiguous abbreviation S.T. instead of the clearer M.T. is used to designate malignant tertian malaria; in discussing the treatment of malaria, mepacrine is mentioned only, as it were, incidentally and is dismissed in less than two and a half lines; typhus is not mentioned at all; and relapsing fever is said to be transmitted by the bite of the louse. Though we realize that a book of this nature should not be overburdened with detail, it is desirable that what is written for the education of primitive students should be balanced, accurate, and precise.

## ADULT TUBERCULOSIS

*Pulmonary Tuberculosis in the Adult: Its Fundamental Aspects.* By Max Pinner, M.D. (Pp. 580; illustrated. $7.50.) Springfield: Charles C. Thomas. 1945.

The author of this book states in his preface that he has not attempted to write a textbook, his aim being to create understanding rather than to impart knowledge. Prof. Max Pinner has achieved this object so successfully that it is difficult to do

justice to his work within the confines of a review. The task of the reviewer must therefore be to encourage others to read the book for themselves.

The early chapters are concerned chiefly with the pathology and pathogenesis of phthisis. Taking the tubercle bacillus as the starting-point, the reader is shown, in turn, the micro-organism itself, its effect upon the body tissues, the reactions it produces, both local and general, and finally the nature and uses of tuberculin. Thence he proceeds to a discussion of the factors which determine the development of clinical tuberculosis; the vexed question of the relative importance of endogenous and exogenous factors in reinfection is skilfully and fairly expounded, but the author shows that it is of less practical consequence than the problem of the causal factors which prepare the soil for the seed. After some wise comments on the classification of tuberculosis, and the proper function of classifications, Prof. Pinner goes on to a systematic description of the whole course of pulmonary tuberculosis, from the primary complex, through the incipient stages of reinfection, to the established chronic disease. This account is illustrated by reproductions of *x*-ray pictures with comparable photographs of necropsy material and photomicrographs. An excellent description of tracheal and bronchial tuberculosis is also included. The later chapters deal with the practical problems of the diagnosis and treatment of tuberculosis. Here again we are never allowed to lose sight of the wood for the trees; our field of vision is extended by fascinating discussions of the physiology of respiration and of the principles upon which treatment is, or should be, based. The brief descriptions of various forms of treatment, including all types of collapse therapy, are admirably balanced, modern, and comprehensive. The book concludes with an evaluation of the results of treatment and a discussion of the epidemiology of phthisis.

This is largely a work of collation and assessment. From a vast knowledge of the literature the author has marshalled, weighed, and set out the facts, never losing sight of his aim, which is to present a picture of pulmonary tuberculosis as a whole, rational and consistent within itself. He does not claim to have added anything new to our knowledge of the disease, and yet the unified conception which he has set forth may seem new to many workers in tuberculosis. Preoccupation with some particular aspect or problem so often destroys the sense of proportion, and perspective is restored by this clear presentation of the established facts which must form the basis of any useful discussion. Mention must also be made of the bibliography, which is noteworthy both for its completeness and for its mode of presentation. At the end of each chapter there is not only a list of the key papers referring to the subject, but also a short review of each article quoted, with notes on its scope and value.

Good books about tuberculosis are not common, and, in spite of his modest claims, Prof. Pinner has added another to our store. Everyone who is engaged in tuberculosis work will enjoy reading and rereading this book, and it is for them that it was written.

## NEW SUPPLEMENT TO B.P.C.

*Seventh Supplement to the British Pharmaceutical Codex, 1934.* Additions and Amendments to Parts I and III, with Cumulative Index. (Pp. 133. 7s. 6d.) London: The Pharmaceutical Press. 1945.

The *B.P.C.*, like the *British Pharmacopoeia*, has been busy in public service during the war giving birth to a family of Supplements. The young of the *Codex* are now seven in number, and the latest addition should be a favourite with a great many.

It is curious that the *Pharmacopoeia* does not put its pride in its pocket and follow the *Codex* in making itself a really useful book by including a section on actions and uses and also a list of proprietary names with their non-proprietary equivalents. Even the *Codex* is rather bashful about proprietary names, for they are not mentioned in the monograph dealing with the substance. Thus the reader will be completely in the dark concerning cinchocaine unless he happens to stumble on nupercaine in another part of the Supplement, where he discovers that cinchocaine is its non-proprietary name. Alas that we must wait for the day, which will surely come, when the proprietary name will appear unashamed in the monograph!

The members of the Codex Committee certainly stick out their necks, as the Americans say, when they describe actions and uses. They deserve credit for their courage, and a recognition that they have written these paragraphs well. Any attempt, however good, would be easy to criticize. Thus, concerning cyclopropane the *Codex* says: "The chief disadvantage of cyclopropane is that it does not stimulate respiration." What anaesthetic does? Surely the right way to explain the chief disadvantage is to say that concentrations of cyclopropane which give sufficient muscular relaxation are not far removed from concentrations which arrest respiration. In this sense cyclopropane compares very unfavourably with ether.

It is satisfactory to find a section on the treatment of barbiturate poisoning, but a pity that strychnine and nikethamide and the use of amphetamine sulphate to raise the blood pressure are mentioned several lines before the one effective drug in barbiturate poisoning—namely, picrotoxin—is brought into the story. Nor would one guess that pholedrine is superior to amphetamine for raising the blood pressure. However, the proportion of generally acceptable statements is very high and makes the Supplement of great value to the medical practitioner.

## Notes on Books

We welcome the appearance of a ninth edition of Sir JAMES PURVES-STEWART'S *Diagnosis of Nervous Diseases* (Edward Arnold; 40s.). As the author relates in the preface, it has been compiled with difficulty during the war, many of the new references and illustrations which it was hoped to incorporate having reached the bottom of the Atlantic. The regional and symptomatic arrangement of matter has always made this work popular with students and practitioners alike, since it is an excellent complement to the more systematic textbooks which deal with the diseases of the nervous system. It is unfortunate that medicine in all its branches is becoming so complex, for it means that even textbooks such as this are growing out of hand, and are becoming too heavy and too long to afford the pleasant reading which earlier editions of this work used to give to the last generation of aspiring neurologists. Still the present generation will find the 880 pages before them well worth perusal, and will discover a wealth of information which is not easily gleaned from any other book.

The Inter-Allied Health Charter Movement began in 1943 under Anglo-Czechoslovak auspices, and it has now published a *Year Book*, 1945 edition, putting on record in a series of articles the efforts of Great Britain and her Allies in Western and Central Europe to further Clause 6 of the Atlantic Charter—the famous clause embodying the hope "that all the men in all the lands may live out their lives in freedom from fear and want." One of the introductory articles is by Dr. Norman A. Sprott, who complains of recommendation "B" of the British Medical Association, which, in connexion with the future of the medical services, declares that the health of the people depends primarily upon certain social and environmental conditions. Dr. Sprott thinks this an inadequate and over-simplified statement, and for his own part he sets out fourteen points as essential to health. These include regulation of size of the population, freedom from serious injury and infestation and infection, right choice of parents, and the means of satisfying certain primitive instincts. Extended in this way the word "health" seems to become meaningless; it might just as well be replaced by the word "life." There is a great deal of interesting information in this book about health movements in other countries, but it would have benefited by better arrangement and some sacrifice of matter. It is issued from the Health Charter Communication Centre, 3a Portland Place, London, W.1, at the price of 10s.

For the use of those wanting to revise their knowledge quickly Dr. R. GORDON COOKE has written *A Summary of Medicine for Nurses* (Faber and Faber; 3s. 6d.). In a hundred pages the author gets out brief notes—from "Addison's Disease" to "Worms." For those who like this sort of synopsis this is a good example of its kind.

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A Circular (No. 208/45) has been issued by the Ministry of Health on the disposal of Government-owned equipment held by local authorities in excess of their requirements for the Ministry's Emergency Services. It has now been decided that, owing to difficulties of transport and lack of adequate storage space, the bulk of this surplus equipment (other than food, vehicles, and clothing) should be disposed of locally, and that where arrangements can conveniently be made the goods should be offered to the public through traders. The authority for local disposal of surplus goods provided for, or at the expense of, the Ministry of Health is designed to effect speedy clearance of premises, and the Minister feels that local authorities will welcome the opportunity of making domestic goods available to their inhabitants. The Women's Voluntary Services have agreed to help in this task of disposal wherever they can.

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## THE FREEDOM OF THE PROFESSION

We print in the opening pages of this week's *Journal* a list of principles believed by the Negotiating Committee to be fundamental to the practice of medicine, the Minister of Health's statement in the House of Commons last week, and the comment of the Secretary of the Negotiating Committee. It is hoped that everyone will read the three pronouncements with care. The Negotiating Committee, it may be repeated, is composed of representatives of the British Medical Association, the Royal College of Physicians, the Royal College of Surgeons, the Royal College of Obstetricians and Gynaecologists, the Royal Scottish Medical Corporations, the Society of Medical Officers of Health, and the Medical Women's Federation. It is, therefore, truly representative of the medical profession in this country.

The essence of the principles is the freedom of medical men and women to practise the art and science of medicine according to existing knowledge, informed judgment, professional standards, and the dictate of conscience. The framework of the new National Health Service must allow for the exercise of full professional freedom, or the progress of medicine will be halted and the public will suffer.

## THE MINISTER'S FIRST STEPS

The Minister of Health's statement in Parliament last week is by now familiar to readers of the *Journal*, and is recorded in full in this week's issue (p. 834). Although the Minister, Mr. Aneurin Bevan, at the same time stated that the Government had not yet decided upon the proposals for a National Health Service which it will submit to Parliament, his considered pronouncement last week is clearly linked up with these proposals. In reply to a question he summarized them when he said, "What I have done is to inform doctors that it is highly improbable that I will permit the sale and purchase of practices." The former Minister of Health, Mr. Willink, called the Government's statement "vague and menacing." He also observed that most of Mr. Bevan's colleagues in the Government agreed that the matter was one of great complication and not essential to the introduction of the National Health Service. To this Mr. Bevan rejoined that he had every reason to believe that the announcement would be received with great satisfaction by most doctors. If the Minister is basing this assertion on the results of the B.M.A. questionary, it should be pointed out that the analysis of replies from those most directly concerned —namely, general practitioners—showed that exactly half were for and half against the sale and purchase of publicly remunerated practices.

It is important to distinguish between the sale and purchase of publicly remunerated practices and the sale and purchase of practices consisting of patients outside any public scheme. The Minister intends, it seems, to make the buying and selling of the former type of practice impossible. It should be stressed that the promise of compensation covers all capital values that would be directly affected by legislation, and that a man, for example, in a wholly private practice proposing to retire at the introduction of the new service would receive compensation from the Government. If the Minister's sole wish is to make it easier for a young man without means to enter practice, and if he does not intend to interfere with a way of professional life which has evolved on a mutually co-operative basis between doctor and patient and doctor and doctor, then the medical profession would be willing to work out with him ways and means of doing this. But a careful reading of the second item of the Minister's statement (see page 834) suggests that the question of the buying and selling of practices is linked in his mind with the distribution of doctors. To put it more bluntly, the Government intends to buy existing practices so that it can direct medical labour. That is to say, if a young man wishes to succeed his father or join with colleagues in practice in a district where he has grown up and which he knows and where he is known—and the hereditary element is strong in British professional life—he may, by *force majeure*, be translated to another place where he has no native ties or interests. Will this give the public a good doctor and a doctor who is happy in his conditions of work?

If it be granted that there is maldistribution of doctors, is the Minister clear in his own mind about the causes of this? Does he, for example, believe that there is unemployment in the medical profession, or under-employment? The finger of scorn is often pointed at Bournemouth, but Bournemouth and other places like it are to a large extent convalescent homes for invalids. There are probably as many sick people in Bournemouth as there are in Rhondda. The trouble with Rhondda, as the Minister has every reason to know, has not been under-doctoring but unemployment. Anyone with an intimate knowledge of the medical profession knows that there are few men in practice who do not do a full day's work or more, and usually seven days in the week. Doctors are distributed unevenly because there are not enough to go round, and one remedy is not arbitrary direction but an expansion of medical schools and the recruitment into them of increasing numbers of men and women fitted to become medical practitioners. If the argument may be carried a little further we would suggest that the reason why there are not enough doctors is the gross underpayment of publicly remunerated doctors since the introduction of the National Health Insurance Act. The medical profession has its own proposals for improving the distribution of doctors. It is noteworthy that the Minister has suggested a narrow solution

of the problem before even hearing the views of the profession on it. Is his desire to direct stronger than the desire to discover the facts of the case?

The practice of medicine demands high qualities of character, an intelligent mind, and a resourceful nature. If the country wants a profession stocked with men having these attributes it will be wise not to produce conditions which will be antipathetic to them. The present Minister of Health is notorious for the freedom with which he uses his speech, and he would therefore, we may believe, welcome an equal freedom of approach on the part of the profession. The profession recognizes that Mr. Bevan has a real interest in the task to which he has set his hand, and a genuine wish to work with the men who are going to provide the service. He has himself said that the new health service cannot be run by men who are discontented or have a sense of grievance. The real difficulty felt by medical men who are not partisan Socialists—and they comprise the majority of the profession—is that they see themselves being called on to fashion a service in co-operation with a Government which has rigid doctrinaire views on the ordering of society. If the Government does not recognize this fact and has not the strength of mind to model the new service on the basis of fact and not theory, then the evolution of medical practice may turn out to be retrograde. Before the medical profession can give a considered opinion on the whole matter it must know what the whole matter is. At the moment it knows no more than what the Minister said last week. But it has read the writing on the wall, and does not pretend to like it.

## POST-WAR VIENNA

A White Paper[1] dealing with conditions in Germany from December, 1918, to March, 1919, was published early in 1919; later in the same year the results of a full investigation conducted by Prof. E. H. Starling were published as a White Paper.[2] It is a sign of a decay in the attitude of Governments to governed during the last quarter of a century that no official reports on conditions on the Continent have appeared so far and have been refused by the Government; that official information has been given only in answer to critics in Parliament; that we have had to depend for information on journalists who might well be giving truthful but unbalanced accounts. We must therefore welcome such reports as those of Bastanie and his colleagues[3] on conditions in Belgium (though before this appeared there had been great changes) and that of Magnus Pyke which appears in this number of the *Journal* at page 839.

Comment on the failure to issue any rations for a month after the capture of Vienna, and on the gross inadequacy of rations from June to September, would be superfluous. What most concerns us now is that the Allied Council has since September agreed to try to provide the normal consumer with 1,550 calories daily. This 1,550 standard has been mentioned frequently in the lay press as the minimum needed to prevent continuous degeneration. Dr. Pyke now writes of 1,600 calories; we believe that this is the first time that such a low standard has been suggested by anyone with a claim to knowledge of nutrition. Where did this standard originate? What justification is there for it? In occupied countries rations supplied less; but, as may be seen from Brull's report[4] on conditions in Liège, people got far more of rationed foods such as bread than the regulations allowed. In the last war German rations supplied much less; Loewy's survey[5] (made in April, 1917) shows that people were actually eating about 1,600 calories per head (2,000 per unit) and were getting more than their allowances of rationed foods. Nevertheless there was a progressive decline in health. According to *Food Consumption Levels in the United States, Canada, and the United Kingdom*,[6] "in early 1941 . . . supplies fell to an average of less than 2,700 calories per head per day, and, although rationing was well established, there were indications of impaired health and working efficiency. General experience tends to show that, while the current United Kingdom supply level is adequate, the slightly lower level in 1941 was less than adequate, though some allowance must be made for the rapidity with which consumption levels fell in 1940–1. In other words, the present supply level of about 2,800 calories per head per day is, for the United Kingdom, about marginal." This was 2,700 calories "going into consumption"; the actual food eaten was equivalent to about 2,450 calories. Any impairment of health and efficiency was more probably due to causes other than lack of calories. But we cannot pose a standard of 2,500 calories for ourselves and 1,600 for others. Unemployed in Britain consumed about 2,200 calories a head.[7] Five-year-old children in English industrial towns get, on an average, 2,100 calories.[8] It is reasonable to take as the rock bottom the 2,000 calories proposed by the military authorities as the minimum daily requirement needed to prevent disease and unrest.

Vienna is at any time particularly ill situated for getting food in addition to rations; still more so when armies of occupation are taking any supplies from the country districts. Even in a part of the city which contained large areas of allotment and was situated near the outskirts the calories added amounted to only about 300. Presumably the Allied Council does not intend that the Viennese should add to their 1,550 calories by the irregular methods practised in the occupied countries during the war. The standards for vitamins A and C suggested by Dr. Pyke are much higher; certainly many people in this country have subsisted for a long time on less than 25 mg. of ascorbic acid. But, with no issue of milk to children over 6 years old, the intake of calcium by older children will remain inadequate unless more chalk is added to the flour in Vienna than is added to ours, for 1 lb. of our fortified bread supplies only

[1] *Reports by British Officers on the Economic Conditions prevailing in Germany*, Cmd. 52, 1919, H.M. Stationery Office.
[2] Starling, E. H., *Report on Food Conditions in Germany*, 1919, H.M. Stationery Office.
[3] Bastanie, P. A., *et al.*, *British Medical Journal*, 1945, **2**, 351.
[4] Brull, L., *Les Etats de Carence en Belgique*, 1945, Harman et Cie, Paris.
[5] Loewy, A., *Z. Phys. diet. Ther.*, 1919, **23**, 81.
[6] H.M. Stationery Office, 1944.
[7] Potts, T. N. V., *Report on a Study of Diets of 205 Families in the West Riding of Yorkshire; A Study of the Diets of Sixty-nine Working-class Families in Newcastle-on-Tyne*, 1939.
[8] Bransby and Wagner, G., *British Medical Journal*, 1945, **2**, 682.

about 0.26 g. of calcium. Dr. Pyke gives records of heights and weights of children in two schools from June, 1942, when rationing in Germany was already severe. These heights and weights compare favourably with those found in London in 1938,[9] while in 1920 heights and weights in Vienna[10] were much lower than in London in 1905–12. It appears that the special allowances for children in Vienna during the war were adequate, and that even during the worst period of this year the boys got enough to maintain their weights; the girls, who according to Pyke's survey ate less, had lost weight during the year. But if supplies are not increased we must expect a decline similar to that after the last war.

The main problem, then, is to provide calories, and calories can be provided as wheat. Two years ago, at a time when the amounts that would be needed for relief were grossly underestimated, there were some 30 million tons of wheat available. But the International Wheat Council reported in September of this year that "the present estimate of world's import requirements for the year ending July 31, 1946, exceed by a substantial margin the present supplies available for export during that period from Argentina, Canada, Australia, and the United States." On Dec. 7 Sir Ben Smith said in the House of Commons that "one million six hundred thousand tons of wheat were required in the British zone alone, and it was a physical impossibility, because of the world shortage, to supply that." Has all that grain been used up in feeding livestock and making commercial alcohol? If there are the stocks, transport is needed to bring them across the Atlantic and distribute them on land. Was Sir Arthur Salter correct when he said that transport is available? We want a White Paper that will give a full account of conditions on the Continent and of the stocks and transport that can be used for relief.

The sufferings of Vienna have a place in British medicine, for it was there that Dr. Harriette Chick and her colleagues made the classical studies that established the importance of vitamins in human nutrition. The original intention was to study hunger oedema, which was prevalent in 1918; but by July, 1919, few cases could be found. The number of cases in the first weeks of October, 1945, was from 200 to 300. Famine oedema is still a mystery. Why does oedema appear in some cases when the serum proteins are not reduced? Why do the serum proteins fall in some cases and not in others? Could not a team from Britain carry out the investigation which was intended at the end of the last war? In Dr. Chick's report[11] there is a photograph of twins, Ida and Johann Potharany; it appeared in a paper by Chick and Dalyell[12] and has been reproduced several times since then. Both Ida and Johann had had rickets and scurvy: Ida, who had been treated with cod-liver oil, was plump and well grown; Johann had not, and remained a wizened misery. When we compare the reports about children's food in England and Vienna that have appeared within a month we feel that these little figures may be regarded as symbolic of the children in the two countries.

[9] Report of School Medical Officer, L.C.C., 1938, P. S. King and Son, London.
[10] Gribbon, M. R., and Ferguson, M. I. H., *Lancet*, 1921, **1**, 474.
[11] Med. Res. Cncl. Spec. Rep. Ser. No. 77, 1923, H.M. Stationery Office.
[12] Chick, H., and Dalyell, E. J., *British Medical Journal*, 1921, **2**, 1061.

## WHOSE LOAF?

In January of this year a Conference was convened by the Ministries of Food and Health and other Departments to discuss the composition of post-war flour and bread. The Conference met six times, and appointed two technical subcommittees to consider special points. Under the chairmanship of Lord Horder one subcommittee reported on the minimum quantities of nutrients to be prescribed in regulations dealing with flour. The second, under the chairmanship of Mr. C. A. Loombe, Director of Cereal Products in the Ministry of Food, looked into the question of regulations covering the content of nutrients in flour. Briefly, the Conference recommends that flour should contain not less than certain minimum quantities of the three "token" nutrients—vitamin $B_1$, nicotinic acid, and iron—the minima per 100 grammes of flour being, in milligrammes, 0.24 of vitamin $B_1$, 1.60 of nicotinic acid, and 1.65 of iron. It is stated that these minima can be supplied in the present 80% extraction flour, and recommended that for the time being this should be continued. A further recommendation of the Conference is that before the remaining period of control ends certain difficulties discussed should be studied.

Of the six items needing investigation, four of them refer to reinforcement with the "token" nutrients. In the last paragraph but one of the report of the Conference[1] it is stated that the Government, in the light of further studies, will have to decide whether "it will be both practicable and in the national interest to prescribe, or alternatively to permit, the manufacture and sale of low-extraction flour which has been reinforced by added vitamins."

When the wheat has finally been separated from the chaff, is this country going to have the millers' loaf or the doctors' loaf? That is the question a reading of the report provokes. The millers are concerned about the public taste for flour in various shapes, about safeguarding the position of country millers, and about the business morals of millers. Mr. Loombe's subcommittee "came to the conclusion that a regulation prescribing a minimum extraction rate could not be enforced after the present control of the milling industry ceases." To secure adherence to a prescribed minimum rate of extraction would, it believes, be possible only under a comprehensive system of Government control such as exists at the moment. Again, it is stated that flour milled to a specified minimum extraction rate could be imported only "provided the Governments of the exporting countries were prepared to agree to take the necessary action to ensure that the millers produced for export only flour so milled." Before the war about 10% of the flour consumed in Great Britain was imported from Canada and Australia in the form of flour.

If enforcement of regulations is impracticable, then reinforcement with vitamins is the remedy proposed. This is a sorry conclusion to arrive at, and one, we are glad to see, that is not accepted by "the official scientific and medical members of the Conference." These members "hold strongly the view that flour should not only have the prescribed minimum quantities of the specified nutrients but that those minima should be retained in the flour from the wheat berry in the process of milling," and it is stressed by them that the majority of nutritionists in this country are agreed about the advantage of natural over reinforced foods.

Bread is the staple of the average man's diet. The first civilization was made possible by the fact that wheat grew naturally in the Nile valley. For approximately 6,000

[1] Ministry of Food. Report of the Conference on the Post-war Loaf. Cmd. 6701. H.M. Stationery Office. (4d.)

years man's taste was not offended by the whole wheat grain. So once more may we appeal to the millers and the bakers to join in with scientists and doctors in persuading the people of this country to return to a civilized habit. It is wonderful what propaganda will do.

## PREFRONTAL LEUCOTOMY

The introduction of prefrontal leucotomy, or lobotomy, nearly ten years ago opened a curious but promising chapter in psychiatry. Whatever speculative afterthoughts are evoked to explain the effects, the measure still belongs to the realm of the empirical. It is not unfair to state that in leucotomy one destroys cerebral tissue of uncertain anatomy and of unknown function for the relief of disorders of obscure nature and pathology. That the operation proves effective in many cases of chronic mental illness is not to be denied, even though—perhaps because—the picture of an organic brain defect replaces that of an obstinate psychosis. We may quote the restrained comments of such experienced "psychosurgeons" as Freeman and Watts,[1] who write: "Above all we do not speak of recovery, since in undergoing prefrontal lobotomy a patient may exchange one psychologic deviation for another. It comes down to a question of which deviation interferes less with his social adjustment. If a patient can take care of himself after operation we are satisfied with the results." The authors are, of course, discussing schizophrenics, in which only two-fifths may be expected to show good results, as opposed to two-thirds of depressive cases and four-fifths of obsessional neurotics.[2]

There are many steps yet to be taken before leucotomy can become a scientific rather than an experimental measure. Some less drastic attack upon the frontal lobes may perhaps produce the same beneficial results. In leucotomy we have an opportunity of neuro-anatomical and physiological research which might well be exploited by the British school of psychiatry. What is the least common factor to be observed in order to achieve results? What is the precise anatomy, and what the exact function of the associational, projectional, and commissural fibres which are sacrificed? Kindwall and Cleveland[3] say that the purpose of prefrontal leucotomy is to cut "the association pathways connecting the prefrontal lobe with the remaining ipsilateral hemisphere and, to an indeterminate degree, the contralateral hemisphere." But Freeman and Watts believe that the effects of leucotomy are due to severance of the fronto-thalamic tracts. Do retrograde degenerative changes actually occur in the dorsomedial nucleus after leucotomy, as has been stated? Further post-mortem studies are required, and much more work on the lines of that of Earl Walker. Understanding of the nature of restitution of cerebral function after brain injuries is largely *terra incognita*, but such statements as "lobotomy tends to produce extraversion, and perhaps its anatomical and physiological significance lies in that realm where correlation between the ectomorphic physical type and the cerebrotonic temperament exist," means just nothing at all. Neurologists and psychiatrists have before them the lesson of the Wagner-Jauregg treatment of general paresis. Empirical in its conception, it was found to work; but malaria, as such, was not the beneficial agent, and now in artificial, rather than natural, fever therapy we begin to witness an understandable and not unscientific measure.

[1] *Amer. J. Psychiat.*, 1945, **101**, 739.
[2] *Physical Methods of Treatment in Psychiatry*, by W. Sargant and E. Slater, F. and S. Livingstone, Edinburgh, 1944.
[3] *Amer. J. Psychiat.*, 1945, **101**, 749.

## OUTPUT OF CORTICAL HORMONE

Although the presence of a hormone (or hormones) in the cortex of the suprarenal has been clear since active cortical extracts were first prepared, there has been no evidence to indicate in what circumstances the hormone is liberated in the blood. Until recently knowledge of hormone liberation has been confined to the liberation of adrenaline when the splanchnic nerves are stimulated, and of insulin when there is a rise of blood sugar. Verney has lately demonstrated that painful stimuli give rise to an output of one of the pituitary posterior lobe hormones, and now Dr. Marthe Vogt[1] has devised a method of studying the release of hormone from the suprarenal cortex. Her method has been to collect blood directly from the suprarenal vein, to separate the plasma, and to test it by injecting it into young rats after adrenalectomy. If young rats so prepared are exposed to low temperature (2–4° C.) they die in 5 or 6 hours; if they receive injections of cortical hormone at intervals of 1½ hours they live longer, and their survival time is proportional to the amount of cortical hormone given at each injection. This method, applied to groups of young rats, enables a quantitative estimate to be made of the cortical hormone present in a sample of blood taken from the suprarenal vein.

Dr. Vogt was able to determine the presence of cortical hormone in the suprarenal vein of the dog, the cat, the goat, the rabbit, and the pig. She was unable to find detectable amounts in arterial blood or in blood taken from the right side of the heart. The average output of hormone from the dog's suprarenal was very large when compared with the amount present in commercial preparations. One well-known preparation contains the activity of 75 grammes of gland in 1 c.cm. Comparison with this preparation showed that the average daily output of hormone from the suprarenal glands of a small-size dog (10 kg.) is equivalent to 230 c.cm. of commercial extract. The output was found to be of the same order in all species examined when calculated per unit of body weight; there was variation from about half to three times the mean figure (given above).

Dr. Vogt[2] has also shown that adrenaline, when infused slowly into a vein (in amounts which occur in the body in physiological conditions), causes an immediate and prolonged increase in the secretion of the cortical hormone. The normal output increases several times. This effect is not due to changes in the rate of blood flow through the gland or to changes in blood pressure, nor is it an indirect effect exerted by way of the pituitary body. This finding is clearly one of great importance. There have been several indications that the cortical hormone plays a part in conditions of stress; we now see that adrenaline, which serves many functions in an emergency, can call forth an increased supply of the cortical hormone, perhaps to accelerate the formation of carbohydrate from protein and for other purposes still undefined. Stimulation of the splanchnic nerves was likewise found to cause an increase in cortical secretion.

In a third paper[3] Dr. Vogt has made other observations. She has found that injections of adrenaline into young rats, repeated 3 times daily for 8 days, cause an accumulation of fatty material in the cortex, and that if the injections are continued for 24 days the storage becomes greater still and is accompanied by a significant increase in suprarenal weight. These changes do not occur in the absence of the pituitary. Now suprarenal hypertrophy is also brought on by the implantation of tablets of hexoestrol, but the

[1] *J. Physiol.*, 1943, **102**, 341.
[2] Ibid., 1944, **103**, 317.
[3] Ibid., 1945, **104**, 60.

hypertrophy differs entirely from that produced by adrenaline, since it is accompanied by a complete disappearance of fat from the cortex, and the cells are seen to have swollen cytoplasm and nuclei. Rats treated with hexoestrol die more quickly than normal rats when the adrenals are removed, which suggests that hexoestrol administration results in a diminution of the amount of cortical hormone produced in the gland. The increased amount of lipoid material produced by adrenaline therefore probably represents an increased store of the hormone.

## SUBACUTE DEGENERATION OF THE BRAIN IN PERNICIOUS ANAEMIA

Subacute combined degeneration of the spinal cord is the best-known neurological complication in pernicious anaemia. The name is somewhat clumsy and inaccurate, and for this reason Kinnier Wilson,[1] following the lead of French authors, suggested that it be replaced by "neuro-anaemia," although he was fully aware of the fact that there is probably no direct causal relation between the anaemia and the degeneration of the spinal cord. Subacute combined degeneration may precede disease of the blood, and may even be found in conditions such as cage paralysis of monkeys, in which anaemia is not known to occur. The present theory is that "neuro-anaemia" is due to a deficiency closely allied to but not identical with that of the anti-anaemic principle. There is no evidence for any of the known vitamins being involved in the pathogenesis of the condition.

Subacute combined degeneration usually ends at the level of the crossing of the pyramids in the medulla. It is not generally known that in a number of cases of macrocytic anaemia the cerebral white matter may be affected by a similar patchy demyelination. In a recent paper Adams and Kubik,[2] reviewing earlier reports in the literature and adding personal investigations, have proposed the name "subacute degeneration of the brain," thus emphasizing the pathological and pathogenic similarity with the lesion in the spinal cord. It is interesting to note that in cage paralysis of monkeys the lesion of the spinal cord is usually complicated by a very extensive patchy demyelination of the cerebral white matter. The occurrence of such demyelination has been held responsible for mental changes in pernicious anaemia. According to Bremer[3] psychopathic manifestations are found in about 20% and psychotic symptoms in 7 to 8% of patients suffering from pernicious anaemia, the frequent terminal confusional states being excluded. The psychotic manifestations are usually of the acute confusional type with hallucinations and delusions, but chronic depressive and paranoid syndromes have been reported. However, the demyelination of the cerebral white matter is not the only cause of mental symptoms. Some of the psychoses and psychoneuroses observed in the course of pernicious anaemia are merely exacerbations or recurrences of previous mental abnormality. Anoxia resulting from the impaired condition of the red blood cells is another possible source which may particularly account for the terminal psychotic manifestations. Moreover, evidence grows that vitamin-B deficiency, though not directly involved in the pathogenesis of subacute degeneration, may complicate pernicious anaemia. In pellagra, widespread chromatolysis of large nerve cells of the type known as retrograde degeneration is a constant histological finding, and this nerve-cell change has been reported in a number of cases of pernicious anaemia. It has also been shown (Campbell and Biggart[4] and Meyer[5]) that the Wernicke syndrome may arise in the course of pernicious anaemia. This syndrome is now recognized[6] as being caused by deficiency of vitamin $B_1$.

The fact that pernicious anaemia may be complicated by vitamin-B deficiency is naturally of therapeutic importance. Moreover, it may at last resolve the old controversy whether or not the lesion of the spinal cord in pernicious anaemia is accompanied by a degeneration of peripheral nerves.

[1] *Neurology*, 1940, London.
[2] *New Engl. J. Med.*, 1944, **231**, 1.
[3] *Z. ges. Neurol. Psychiat.*, 1937, **158**, 36.
[4] *J. Path. Bact.*, 1939, **48**, 245.
[5] *J. Neurol., Neurosurg., Psychiat.*, 1944, **7**, 66.
[6] See annotation, *British Medical Journal*, 1942, **2**, 249.

## ULSTER MEDICAL WAR RECORD

The number of medical graduates of the Queen's University of Belfast who served in the war is 660, so far as can be ascertained. Of these the names of 420 were dealt with by the Northern Ireland Medical War Committee, and it is considered certain that more than 240 others practising in various parts of the Empire volunteered for service without notifying the university. Some 50 medical students also volunteered. Graduates and undergraduates killed in action or dying on active service numbered 33, and 5 others are missing. Decorations were bestowed on 55, who included four recipients of the D.S.O. and 17 of the Military Cross, while 27 others were mentioned in dispatches. Four members of Queen Alexandra's Imperial Military Nursing Service lost their lives. When it is remembered that conscription was never applied to Northern Ireland, it is claimed for these figures that they constitute a noteworthy record of voluntary service. The Belfast Medical School thus sustains a long and honourable tradition, which began at the time of Trafalgar, and in the 1914-18 war gave some famous names to military medicine.

## NUFFIELD CHAIR OF CHILD HEALTH

The Nuffield Trust has once more performed a highly valuable service in adding yet another extension to the always incomplete structure of medicine by founding a Chair of Child Health in the University of London. The details of this were given in the *Journal* of Sept. 23, 1944 (p. 410).

The next stage in this work has now been completed by the appointment to the chair of Dr. Alan Moncrieff—an appointment which will ensure that the work will be carried out with energy and thoroughness, and with every prospect that solid contributions to knowledge in this branch of medicine will come out of the institute in the years to come. Dr. Moncrieff is still of an age when it is permissible to describe him as a young man, and those who know of his enormous industry and of his versatility in so many fields of medicine will hope for great things from the new institute, which he now comes to preside over at the age of 44. Since 1934 he has been on the staff of the Middlesex Hospital and the Hospital for Sick Children at Great Ormond Street. Before this he studied the problems of respiratory failure and asphyxia of the newborn in Germany while holding a Rockefeller Medical Fellowship; and before this, again, had prosecuted his paediatric studies in France. For many years now he has served as Editor of the *Archives of Disease in Childhood*, published by the B.M.A., and has won distinction in other fields of medical journalism.

# Reports of Societies

## STETHOSCOPE versus X RAYS

A debate on the stethoscope *versus* *x* rays took place in the Section of Medicine of the Royal Society of Medicine on Nov. 27, with Dr. GEOFFREY EVANS in the chair.

Dr. JAMES MAXWELL said that recent advances in medicine had put an increasing strain on the unfortunate medical student. A pruning process was needed to give the student the opportunity of digesting more recent and fundamental knowledge. In past years emphasis in diagnosis had been laid on physical examination and signs. Nowadays these were not nearly enough. Unfortunately other aids were not used and many doctors never learned to interpret them. The student of twenty years ago had been little better off, in his knowledge of chest signs, than his predecessor a century earlier. Many doctors now practising made the false assumption that if they found no physical signs in the chest there was nothing wrong. The absence of physical signs did not exclude tuberculosis or early bronchial carcinoma, both of which were curable if detected before physical signs were present, but few teachers had the courage to teach this for fear of stultifying their elaborate instruction of physical signs. On the other hand, radiology was not taught to any great extent, and there were not enough radiologists to examine every suspicious chest case. Students should be taught the *x*-ray appearance of the normal chest and its variations before they went into the wards, in their second year of anatomy and physiology. They should be shown lateral and oblique as well as antero-posterior views, and then, entering the wards with this fundamental knowledge, they could start to look at abnormal appearances. At the same time, physical examination must not be abandoned and *x* rays would not replace it. Often an *x*-ray film would reveal a lesion which physical examination would miss, and sometimes the converse was true. Students should be made to listen to every variety of sound until they knew them perfectly, and then, when they knew that they had to have the patient radiographed, and knew what the *x*-ray image meant, the accuracy of chest diagnosis would be immeasurably improved. Examiners should be familiar with the interpretation of *x*-ray films. A practitioner who did not insist on an *x*-ray examination of a suspicious chest, especially after haemoptysis, might be sued for negligence.

### Possibilities and Limitations of X Rays

Dr. PETER KERLEY said that the rash statement was made from time to time that the stethoscope was obsolete; no experienced radiologist would agree with that. When an experienced physician found physical signs he himself was surprised if he found nothing on an adequate (he emphasized the word "adequate") *x*-ray film. In a hundred years the stethoscope had not altered fundamentally; it had reached its limits, and those limits, even in skilled hands, were so narrow that radiography was indispensable. Deficiencies in radiology were due in part to lack of skill and in part to ignorance of living anatomy and physiology. The old phrase that an *x*-ray film was a representation of shadows was wrong. No physicist to-day would agree with the word "shadows." The *x*-ray image was a collective picture of structures of different densities, and these could be identified almost as precisely as on the dissecting table. One of the main causes of error was reliance on a single antero-posterior view. For a proper interpretation not only views in three directions but also tomography were essential. Important technical points were the smallness of the focal spot on the anode and the speed of the exposure. Before long a spot of only 1/250th mm. would probably be available. Condenser units would replace transformers for speed, and their wave form would give finer detail. Magnification with detail would be much increased during the next ten years. The radiologist's battle was not with his medical and surgical colleagues, but with hospital and financial administrators who were aghast at a proposed expenditure that was derisory compared with the cost to the country of half a million registered tuberculous persons.

Radiography was, however, hopelessly beaten by the stethoscope in the diagnosis of heart conditions. But many advances had been made by cardiologists using the screen entirely, and they would get better results if they also took pictures with rotating anode tubes. Contrast media for angiography would soon be made completely safe, and then radiologists would be able to show the chambers of the heart and the pulmonary circulation with comparative ease. Given the staff, the equipment, and the necessary funds, the stethoscope might be put in danger of obsolescence.

### Lessened Importance of the Stethoscope

Dr. GEOFFREY MARSHALL said that there was no reason why they should do without either instrument, but if he had to take one without the other it would be the *x* rays every time. He would be very sorry, however, not to be able to examine his patient in addition, and the stethoscope might be very useful as an adjunct to radiography. By means of the stethoscope he could find out whether a wrong name had been placed on the *x*-ray film or the wrong side of the body indicated. It would be just as reasonable to talk of the stethoscope *versus* history-taking; they wanted everything they could get. *X*-ray films could be misleading and much more difficult of interpretation than was at first supposed. Dr. Maxwell's plea that students should be taught how to use *x*-ray films of the chest could not be too strongly supported. Would *x* rays always give an indication of cavitation in the lung? A straight view would very often fail to do so. Radiologists were very often ready to admit with all due modesty that they could not tell what was the significance of an abnormal appearance. The more experience they gained the more difficult did these cases seem to be. The *x*-ray picture was far from revealing a complete pathology. Students should be told the limitations of *x* rays as well as of physical examination. The stethoscope had certainly descended from its throne; it was not of such vast importance to them now as it used to be, but it still lingered in the imagination of the patient, and medical men—even those who specialized in chest diseases—when they themselves had chest trouble wanted the colleague examining them to listen to the chest. It was difficult to avoid going through the gesture—it was not much more than that—of trying to hear vague mysterious sounds, when something quite definite could be seen on the *x*-ray film. He wished to reinforce Dr. Kerley's plea for multiple views and especially for tomographs.

Dr. L. G. BLAIR said he shuddered at the notion that every man should be his own radiologist. After he himself had reported on chests for a year he became extremely confident—and extremely dangerous. He hoped that he was now less dangerous, and certainly he was much less confident. He did not feel that either students or doctors, if the latter were not doing much chest work, could be taught enough about chest radiology to be practically useful. The answer to the problem was more team work, as in the various thoracic units, in which the radiologist should probably take a leading part. Radiology was supremely important on three great groups: where there were no physical signs, where physical signs were present but of little use without radiology, and where diagnosis could be made with certainty on physical signs but the extent and distribution of the disease could be shown only by *x* rays. Against these three groups there were a comparatively few conditions in which physical signs were present but radiology gave no evidence of disease—for example, non-obstructive lesions of the bronchial tree, bronchitis, and some cases of bronchiectasis. The activity of a lesion, particularly a tuberculous one, was a clinical matter. The present order of examination—history, physical examination, and radiography—should be retained. It should be remembered and taught that in the vast majority of chest conditions the history was of the greatest importance, radiology came next, and physical signs were often only an aid, though at times a very valuable one, to the correct interpretation of films.

### A Jig-saw Puzzle

Dr. MAURICE DAVIDSON said he was accustomed to teach students that a carefully taken history was often worth 60 or more of the value of an opinion. The teacher should emphasize that all his examinations could show only the gra

underlying anatomical differences in the viscera, and only when these were correlated with the information supplied by the pathologist and the bacteriologist and with the knowledge gained previously in the post-mortem room (not so frequently in these days), and all the bits of the jig-saw were placed together, could one reach a really satisfactory conclusion.

Dr. PHILIP ELLMAN said he taught that radioscopy and radiography were important aspects—indeed, a part—of the clinical examination. A clinician chiefly concerned with chest diseases was the most suitable person to do radioscopy, and if he had an expert team he might study the film and consult with his radiological colleagues in a difficult case. He thought it was wrong to look at the film first; this should follow the history, good palpation, good percussion, and good auscultation. Accessory means such as bronchoscopy and bronchography must be included.

Dr. A. L. JACOBS was of opinion that the worst failure was in the frequent neglect of the general practitioner to order an *x*-ray examination of a test case. As a rough general rule, any doctor who saw a patient with a cough and sputum persisting for more than a short time should insist on an *x*-ray examination of the chest. Without team work between the physician, the radiologist, and the general practitioner the position would not be improved. In organizing specialist services throughout the country, particular attention should be paid to areas in which general practitioners were isolated from large hospitals.

Dr. W. M. CROFTON declared that early tuberculosis of the lung could be revealed only by a proper tuberculin test as well as by the stethoscope. The treatment of tuberculosis was in a very sorry state, and he believed that mass *x* rays had been positively dangerous in condemning sound persons to invalidism.

Dr. C. ALLAN BIRCH recalled that almost a hundred years ago Thomas Addison of Guy's had read a paper condemning the stethoscope. Instruments passed through three stages: extravagant claims, severe criticism, general use until ousted by a better method. The stethoscope was now in the third stage. Clinicians, however, should continue to use the stethoscope because patients expected to see it, and a patient not satisfied was not completely treated. Mr. L. C. OLIVER said that the stethoscope, though apparently the chain of office of the physician, was of more practical value to the surgeon, particularly in the diagnosis of acute abdominal disease.

Dr. JOSEPH SMART said that he would be very sorry to see the physical signs and stethoscope abandoned. With an accurate history and careful examination of the chest it was often possible to reach a reasonably accurate diagnosis, or at any rate to differentiate between two or three conditions. The position of the mediastinum was vitally important in chest work and an extremely valuable physical sign. A less expert radiologist might, by introducing a slight rotation, confuse the clinician badly, and then a clinical examination might help much. He himself would be content if students and general practitioners were trained to recognize a normal *x*-ray appearance and to pass on the abnormal ones for closer investigation. He added that in children physical signs of pulmonary disease were notoriously scanty and reliance had to be placed almost entirely on radiological appearances.

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## THE TRAINING OF DIETITIANS

A conference of the Nutrition Society on the "Training, Qualifications, and Function of Dietitians" was held on Nov. 17 at the London School of Hygiene and Tropical Medicine.

Prof. J. R. MARRACK, who presided during the morning session, in the absence of Sir Jack Drummond, said that dietitians in close contact with the actual consumers of food were ideally placed to report to those ultimately responsible on the physical and psychological effects of food policy. They must guard against the propagation of fads, such as unjustified prejudices against certain foodstuffs; the prevalence of "acidosis" in children, for example, might be ascribed to the dietetic prejudices of their nurses. Dietitians must avoid the over-simplification of ideas typical of the late Victorian era. The current popular classification of foods into "builders" and "warmers" must not be accepted too literally. A diet consisting entirely of bread was inadequate for the nutrition of experimental animals, but could be made adequate by adding yeast. Bread contained only poor-quality protein, which was supplemented by the good protein of yeast. Unfortunately, however, the same experiment might be done in reverse. Rats which failed to thrive on a diet of yeast might be successfully nourished by the addition of bread. Dietitians should be trained, therefore, to keep a sense of perspective. They should know when it was legitimate to compromise between dietetic ideals and the exigencies of the larder and kitchen, and when nutritional requirements were so vital as to permit no compromise.

Prof. S. J. COWELL discussed conflicting opinions as to what the word "dietitian" implied. Dietitians were responsible for the feeding of human beings and, as in the nursing profession, some basic training was essential. There must be some authority, such as the British Dietetic Association, to approve courses of instruction and to lay down the standards to be satisfied by individuals before they could be granted official status. The dietitian must have knowledge of the science of nutrition, based on the elements of chemistry, physics, and physiology, and must also have adequate practical experience in the conversion of raw foodstuffs into adequate meals for healthy or sick people. She must be adept in the purchase and storage of food, and the arrangement and care of kitchen equipment. She must be able to guide and instruct the numerous cooks and other personnel responsible for large-scale catering. Dietitians were often employed now in schools, canteens, and other institutions, but many were still concerned with the feeding of both patients and staff in hospitals. Those engaged in feeding healthy persons might also have to advise occasionally on the feeding of the sick. There was much to be said for retaining a period in hospital in the vocational training of all dietitians, but this should not be the only practical experience required.

### The British Dietetic Association

Miss R. PYBUS spoke unofficially on the British Dietetic Association and its role in co-ordinating the training of dietitians. This organization was formed in 1936, and had about 300 full members working in this country. A subcommittee inspected any training centre wishing to be recognized by the association, and visited hospital departments and other institutions where practical experience was offered. Many hospitals and other bodies regarded membership of the association as an essential qualification. Full members were encouraged to register with the Board of Registration of Medical Auxiliaries, although this did not mean that they intended to confine their activities to feeding the sick. The essential academic qualification for dietitians was a diploma in dietetics, which might be gained at King's College of Social Science, the Glasgow and West of Scotland College of Domestic Science, the Royal Infirmary of Edinburgh, or the Royal College of Nursing. The 18-months course included both theoretical and practical instruction in cookery, elementary anatomy and biology, bacteriology, nutrition, budgeting, kitchen administration, catering, infant feeding, diet in disease, and the medical aspects of disease treated by diet. Practical work in hospital during the final six months gave experience in the calculation, preparation, and service of special diets. Before taking a diploma course students had to have a university degree in pure household or domestic science, the State registration in nursing, a teacher's diploma in domestic science, or an institutional management diploma.

Miss M. C. BROATCH emphasized the slow development of dietetic training in this country as compared with America. By 1925 the American Dietetic Society was a powerful body, and was disappointed with an attendance of only 2,000 members at its annual conference! English dietitians were employed only in the special-diet kitchens of hospitals, whereas in America they were in charge of all the catering in many large hospitals. When the need for qualified dietitians became apparent in this country the first five women sent out to America for training all took charge later of special-diet kitchens in their respective hospitals. Greater opportunities for dietetic activities might be expected in the future in the new health services, in welfare centres, in prenatal and postnatal

clinics, and in schools and colleges. Miss Broatch did not agree with certain hospital matrons who thought nursing experience essential for dietitians. Training in large-scale catering, however, could not entirely replace instruction in the special-diet kitchen, where the facilities for constant individual teaching by a qualified dietitian were excellent.

Lieut.-Col. A. N. CHILDS said that greater efficiency resulted if the dietitian was in charge of a separate department responsible to the registrar of the hospital rather than to the matron. Dietitians in America were also employed in commercial organizations. In 1927 one firm tried the experiment of giving details of food values against all the items on their menu. College graduates in white coats went round giving customers scientific advice as to what they should eat. Unfortunately the mental strain proved too much for the customers, and led to the first introduction into America of the *table d'hôte* system.

Mr. A. L. BACHARACH said that hospital dietitians were the people who had succeeded in putting dietetics "on the map." It was a more open question, however, whether the present medical bias indicated the right line for the future development of the profession. Nutrition was a social rather than a medical problem. More healthy people had to be fed in schools, in industrial canteens, and at home than sick people.

### Nutrition in Social Medicine

Dr. F. C. BROCKINGTON stressed the importance of nutrition in schemes of social medicine. With the prospect of a four-year university degree course in dietetics it was important to find for dietitians positions worthy of their training. There seemed to be insufficient scope for the full-time employment of a dietitian in a school meals scheme or in a small hospital. It was encouraging that the health departments of local authorities should have it in their power to create more important posts. The dietitian might be called on to provide dietary health propaganda for the housewife, to give lectures and demonstrations to health visitors and others, to advise hospitals, schools, and institutions, and to plan and supervise dietary surveys. Everyone interested in the proper care of the sick had welcomed the report of the King's Fund on hospital diets. Nevertheless it was unfortunate that the question of feeding the sick should have been given first attention. The balance must be redressed by creating posts from which the entire dietetic field could be surveyed.

Mr. F. LE GROS CLARK said that the Ministry of Education had based its estimates on the assumption that 75% of the average school attendance would obtain midday meals at school. This meant that some 3,300,000 children must be fed on 200 days in the year. Since the school dinner was supposed to provide half the daily requirement of protein, fat, vitamins, and mineral salts, about 30% of the child's yearly requirement of these nutrients would be obtained at school. Under the 146 distinct local education authorities in England and Wales there should be careers for 500 to 700 suitably qualified women. The organizer of school meals should have a sound knowledge of "conservative" methods of cookery by which vitamins and other labile nutrients might be preserved. Experience of large-scale cooking was most important. The school meal must not be a poor imitation of the delights of the home cuisine, but should be endowed with subtleties and attractions that were all its own. Local authorities would find it worth while to attract women of high administrative qualities. This would be possible only if the salary and status corresponded with those of other careers involving a comparable measure of responsibility.

Miss F. C. R. BROWN discussed the work of dietitians in industry. The Institutional Management Association recently published a report on the employment of women in large-scale catering and household administration. A standardized basic two-years training should include the management of canteens, bookkeeping, storekeeping, stocktaking, and industrial relationships. During a third year practical experience should be gained as a junior member of the staff of some organization approved by the training authorities. The number of canteens in this country had increased during the last six years from about 500 to over 18,000. Much higher salaries were earned by highly placed industrial caterers than were paid to hospital dietitians.

### Hospital Dietitians

Miss J. I. MILLS said that a hospital of 700 to 1,000 beds required several dietitians. The catering officer, or food supervisor, was responsible for general administration, staff control, and for the purchase, storage, and distribution of foodstuffs. It was still a matter of opinion whether this officer should be a qualified dietitian or an executive with commercial experience of large-scale catering. The assistant catering officer had control of menu planning and the supervision of the preparation and service of meals. Her special responsibility was to supervise the feeding of the hospital staff, and she probably needed two further dietitians to supervise the feeding of the patients in the general and private wards, respectively. The dietitian in charge of the dietetic department was responsible for the planning, calculation, and preparation of special diets, for maintaining close contact with patients, nurses, and doctors, and for the supervision and instruction of the nurses and student dietitians in diet-kitchen cookery. Centralization had solved many difficulties in the control of staff and supplies, but the ideal arrangement for the distribution of cooked food from the kitchen to the wards had not yet been evolved. In the newly built Southern Hospital in Stockholm the problem had been tackled by decentralization. Instead of one kitchen attempting to serve 1,200 patients, twelve smaller kitchens, each under its own dietitian, each served 100 patients.

Miss WASHINGTON surmised that if all the attributes of scientific knowledge, domestic skill, and strength of character required by the various speakers were to be combined in one person, that person would be more than human. Sound training must be supplemented by long years of hard experience, and trained dietitians should be reserved for large hospitals or for key positions in the public health services. Dr. T. MOORE said a knowledge of nutrition was only one of the many and varied qualifications which were expected of dietitians, who appeared to be exclusively of the female sex. The advanced state of organization already reached in teaching dietetics in this country contrasted very favourably with our almost complete lack of facilities for the teaching of nutrition from a more scientific aspect. Dr. L. W. MAPSON drew attention to the weak link between the research laboratories, where knowledge of nutrition was accumulated and co-ordinated, and the various organizations concerned with teaching dietetics. University chairs in nutrition were urgently required.

Summarizing the day's proceedings, Dr. H. E. MAGEE, who presided over the afternoon session, said that while access to advice on nutritional questions was essential for those running canteens or school meals, these activities should not require the services of qualified dietitians, who should be employed in hospitals or in the public health services. It was important not to overload the syllabus, and to know where to stop in teaching the basic sciences, any of which could obviously absorb the whole time of the student if taught in full detail. Hospital experience should be an essential feature in the training of all dietitians. The aim should be to give a sound basic training, after which the student could branch out and specialize according to her own inclinations. Finally he stressed the importance of nutrition in public health training, and the need for collecting information on dietary habits by visits to the homes of the people.

During the conference it was announced that the new address of the British Dietetic Association is 342, Abbey House, Victoria Street, S.W.1. (Abbey 4909.)

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An exhibition dealing with penicillin is being held in the Palais de la Découverte, the equivalent in Paris of the Science Museum, South Kensington, and a part of the University of Paris. It illustrates the discovery and early development of penicillin in Britain, and also the contributions of the U.S.A. and France. The British material, which has been assembled by the British Council, includes: a collection of penicillin cultures and bacteriological preparations from St. Mary's Hospital, London; a set of photographs of the Penicillin Research Unit, Oxford, showing the results obtained during the Italian Campaign, lent by Lady Florey; coloured photographs, showing the treatment of gunshot wounds, lent by the Medical Research Council; and reprints from various sources on clinical results obtained with penicillin. The exhibition will continue for about three months, and it is hoped that Sir Alexander Fleming and Sir Howard Florey will visit it and give lectures.

# Correspondence

## Buying and Selling of Practices

SIR,—Most of the arguments against dealing in practices are too obvious to merit further emphasis, except I think insufficient stress has been laid upon the enormous hardship imposed upon the young and often penurious practitioner. The details concerning loans and life insurance have been pointed out, though the need for fairly heavy cover against other risks such as sickness and accident has not been mentioned. But what is not generally appreciated is that these are not isolated items but arrive as the last straw in a pile of costs incidental to the taking over of a practice.

The event may well coincide with family responsibilities, and in any case the whole cost of furnishing and running a house has to be met. Very often the purchase of a house is necessary, and even if a fairly good mortgage is obtained this is just another gem in the necklace of millstones to be worn for many a year by the unfortunate young practitioner. Car and other equipment add to the load of debt; even accountant's and solicitor's costs can be a burden in the absence of any remaining capital. And it must not be forgotten that for about half the first year little or nothing is received from the practice unless capital has also been found to buy the retiring practitioner's book debts. Even then the aspiring medico is only in a position to begin his gamble with all the factors that make or mar a successful doctor, including many—such as "squatters"—that are completely beyond his control. And all this may arise out of the fact that he was prepared to undergo the most arduous training to enable him to serve his generation in one of its greatest needs. If not deterred altogether by the prospect he may proceed to inquire why he must still surmount such enormous financial obstacles before he can finally get in touch with those who await his skilled attention. And, of course, that question does not become easier to answer with an increasing number of public contract patients.

Under any 100% scheme, dealing in practices would be most anomalous, and, as pointed out in your leading article (Dec. 1, p. 770), we must now in any case face the thorny problems attendant upon abolition of the custom. "By dint of hard work and professional competence" most of us have maintained, if not increased, our incomes. But so far as the goodwill is concerned many of us would gladly amalgamate that to the general prestige of the profession for the simple return of all the cash we handed to the fellow who left his reputation behind. However, we in turn have been left to obtain our compensation from those who come after, and cannot very well deny that whoever buys us out is customarily entitled to our individual rights, even if we are thenceforth employed as assistants in our own practices. Herein lies the problem, as your leading article intimates. Can doctors forgo a commercial interest in the transfer of their practices without having to choose between a dead loss on the one hand and being split into individual Government properties on the other, and without rendering the process of transfer liable to even greater abuses than it is under the existing system?

Insoluble as the problem may seem at first sight, I think the answer to such questions might well prove to be in the affirmative. And I venture to suggest that one solution might be found in the transference of individual ownership of goodwill into the hands of the profession as a whole. Instead of transferring our goodwill to public ownership by accepting Government money, I would suggest that the profession as a whole buys out the goodwill of its constituents and then rents it out again to individual doctors.

The profession would have to elect a body whose function would be to raise the initial capital and purchase with it all practices, either at once or as their owners retire. It would have a committee corresponding to the British Medical Bureau whose function would be to see that transfers, retirements, acquisitions, or creations of practices were all arranged to the greatest mutual advantage. For this and other services, together with the enjoyment of all the present rights arising out of purchase, all practitioners would pay a rent amounting to a fixed percentage of their earnings, subject to a minimum. This rent could easily be collected at source, especially in a 100% National Health Service, and should rank as a practice expense for income-tax purposes. The percentage of the earnings taken as rent for each practice would not need to be unduly high to cover the cost of the capital represented in the goodwill, and might be varied according to the type of practice. The percentage rent would, of course, depend upon the terms obtained by the profession from the financial interests loaning it the capital to liquidate doctors' individual ownership of goodwill. The loan would probably not be a permanent one, in which case the day would eventually arrive when the profession would retain ownership of its goodwill and require no more from individual doctors than payment of a small practice rent to cover the cost of administration.

The Government might be prepared to loan the profession the required capital rather than resort to other measures to prevent the sale of practices. They would certainly be likely to prefer a loan to the advancement of capital. However, the funds could probably be provided most satisfactorily by those insurance companies who will miss the large "rake-off" they have enjoyed out of both the National Health Insurance and loans for purchases of medical practices. Their interest in the venture would be considerably heightened if they also provided a complete pension insurance scheme for the whole profession. The percentage rate for each practice would have to be a little higher if such things as pensions and free locumtenents for sickness were part of the benefits to be derived from it.

Although we might even be more favourably compensated for our present outlay under such a scheme than by any the Government may have in mind, we and our immediate successors would have to realize that our practice rent, for many years to come, not only would include the redemption of our debt but would carry with it the redemption of our practices for all time from the status of publicly owned utilities. Moreover, our young successors with more wit than money might also rejoice in a professional status and great security without at any time having to shoulder a burden of debt out of all proportion to their income.—I am, etc.,

Eye, Suffolk. J. SHACKLETON BAILEY.

## Medical Future of the Colonies

SIR,—The leading article in the *Journal* of Nov. 17 and the letter from Mr. R. Ogier Ward (Dec. 1, p. 781) are both opportune. More and better teaching centres are needed in the Colonies. All must be familiar with the present difficulties of accommodating those who have graduated at colonial medical centres and who wish to study as postgraduates in Britain. At present it seems that first-class medical education needs to be taken to them rather than they be encouraged to come to this country, where already postgraduate facilities are strained to the utmost, and where there exists the perennial question of colour.

In your leader the suggestion that there should be a Director-General with a panel of consultants seems an excellent one. I note that advisers in obstetrics and paediatrics have been omitted. Those who have worked in a colony appreciate the appalling wastage of maternal and child life, and if any subjects need proper emphasis these are they.

The teaching centres in Britain should be more elastic and should encourage exchange between their teachers and those of the colonial medical centres. The Dutch had this system of exchange before the war. I well remember entertaining at Hong Kong Prof. de Snoo, professor of obstetrics at Utrecht University, who was on his way on an exchange visit for a year to Batavia University. Later he told me what an education it had been for him working in such a strange *milieu* as an obstetric hospital in the Tropics. I would suggest that facilities should be given for not only the chiefs but also their juniors to participate in such an exchange.—I am, etc.,

London, W.1. W. C. W. NIXON.

## Disordered Liver Function in Rheumatoid Arthritis

SIR,—The interesting paper by Drs. Frances Gardner, Alice Stewart, and F. O. MacCallum on induced jaundice in rheumatoid arthritis (Nov. 17, p. 677) discusses fully the possible bearing of bilirubin in the blood on the disease, but except for reference to variation in the blood proteins, which may be due to disordered liver function and give rise to the alteration

in the erythrocyte sedimentation rate in rheumatoid arthritis, the possible influence of other disturbances of hepatic function is not considered. I believe that the explanation of the effect of jaundice in these cases is to be sought in some such disturbance, of which the jaundice is simply an index. Hench, in his work on the problem, called attention to the fact that remissions similar to those occurring in jaundice complicating arthritis also occur in pregnancy. There is a common factor in both conditions which may deserve investigation in any future research. Morris and Peden (*Quart. J. Med.*, 1937, **6**, No. 22, 211) have reviewed very fully the variations in plasma phosphatase in disease, and note that it is much increased in many froms of jaundice and at the sime time mention that Cayla and Fabre have found it much increased in pregnancy.

The coincidence may be of no importance, but on the other hand it seems worthy of further investigation. The occurrence of osteoporosis of the articular ends of the bones in rheumatoid arthritis, due presumably to lowered osteoblastic activity, suggests that there may be a lowered phosphatase, and both jaundice and pregnancy tending to raise it may beneficially affect the progress of the disease. I hope to be able to have some observations carried out on the plasma phosphatase level in active rheumatoid arthritis, but must leave the other possible aspects of the problem to research workers with better facilities.—I am, etc.,

Buxton. C. W. BUCKLEY.

## The Discharging Lesion in Neurology

SIR,—Dr. F. A. Pickworth (Dec. 1, p. 784) will find answers to some of his questions when my paper is published in full, and I anticipate that it will appear in the forthcoming number of *Brain*. Meanwhile I may say that I am in full or partial agreement with many of the statements in his letter. I would point out, however, that even if it could be established (as he asserts) that "faulty integration of nerve impulses is the cause of untoward clinical symptoms," faulty integration would not account for the discharges arising at a site of injury in an isolated nerve in the laboratory.—I am, etc.,

London, W.1. J. PURDON MARTIN.

## Descent of the Testis

SIR,—This problem, as Wing Cmdr. A. W. Badenoch (Nov. 3, p. 601) states, is one in which "the fancies are prolific." There are, however, three separate problems to be distinguished, and to summarize them as a "search for a lower temperature" is to use a teleological explanation in an unjustifiable manner. The three problems involved are: (1) the actual forces operating on the testes in any individual mammal during its development; (2) the function subserved by this phenomenon; and (3) the phylogenetic origin.

With regard to the first problem, a temperature difference could not enter into the system of forces operating on the gland unless there were *both* a tropism tending towards a movement to a cooler region *and* a temperature gradient existing along the whole route of descent, so that it could affect the gland in its abdominal site and initiate movement. Such a temperature gradient does not exist along this path. We do know that endocrine factors affect descent in some way. In animals which have a rutting season, and in which the testes descend at this season (rat and guinea-pig), there is an intermittent secretion of the male hormone, whilst in man it is continuous. But it is not justifiable to conclude that the secretion of hormone initiates the descent in any individual.

It has been suggested that the function subserved by the descent is the need for a lowered temperature for spermatogenesis. In criticism of this view the following points may be made:

1. Spermatogenesis takes place throughout the majority of the Invertebrata and the lower Vertebrata at a varying temperature range. It is difficult to see why in such a well-established process a few degrees should suddenly become so important. In the case of most birds the process is carried out at a temperature higher than that of the mammals. With regard to the cause of bird migration, most authorities are agreed that it is a search for fresh vegetation, and the fauna thereon, to be found in temperate zones. It might also be pointed out that spermatogenesis and egg incubation take place at the temperature of the bird—that is, in some cases over 100° C., whatever the surrounding temperature.

2. In the figures given for the human subjects, in the article cited above, the average lowering of temperature in the scrotal sac was only 2.2° C. These data were obtained with passive anaesthetized subjects, and it is to be questioned whether in the active subject the temperature *inside* the testis, where spermatogenesis takes place, is indeed lower than in the peritoneum.

3. Any lowering of the temperature in this region must be carried out by radiation and sweating. Such could not be achieved in tropical conditions in those animals in which sweat glands do not occur.

4. The rest of the experimental evidence, and the facts of cryptorchidism, could as well be explained on the following theory. In those animals in which the extra-abdominal position has been established for *any other* function, spermatogenesis has become secondarily adapted to a lowered temperature, if this does occur. It perhaps cannot now take place at a higher temperature.

This brings us to consider any other possible function which an extra-abdominal position could serve, and this can only be considered in relation to the possible phylogenetic origin of the phenomenon. The problem does not in its evolutionary aspect primarily concern man. He merely inherited it as part of his lowly origin. The extra-abdominal position of the testes appears to have arisen at least twice among the mammals: (*a*) in the Marsupalia, although the scrotal sac is not developed here; (*b*) in the true placental mammals. Darwin has suggested that "as a general principle, of all the causes leading to an external difference between the sexes, the principle of sexual selection was the strongest." The descent of the testis during the rutting season in some rodents suggests that this might be a means of sexual attraction in animals having few other visible sexual differences. In the lower mammals, which are mainly nocturnal in habit, the intra-abdominal position is retained. In the Proboscoidea and Cetacea, where the internal position is probably secondary, the thick covering of these animals would make the genitalia inconspicuous in any case. The whole phenomenon may have arisen as a "chance" mutation which gave the possessors a survival value in mating, and upon which natural selection could work.—I am, etc.,

King's College, Newcastle-upon-Tyne. MARY A. WOOD, Ph.D.

## Pituitary Stimulation by Light

SIR,—The annotation on the work of Benoit and Ott on pituitary stimulation by light (Nov. 17, p. 695) has been of great interest to medical ornithologists and one hopes to others. Will you allow me as an amateur ornithologist to make some comment on the concluding sentences of the article.

It has been known for nearly a century that the gonads of most of our wild birds are in a state of profound though temporary involution, except during the breeding season. It is not only the fancy of the young bird that turns to thoughts of love in the spring but the mature bird is also thus affected. Yet, in spite of profound depression of the germinal epithelium of both sexes, which makes unseasonal reproduction impossible, some sexual display occurs in a number of species in the autumn. Two British game birds—the wild duck (mallard) and the black grouse—are good examples. In the mallard mating display leading to normal but sterile treading is regular in the autumn on the Continent. I may add from personal observations that this also applies to the English mallard, as might indeed be expected. Autumnal display of male black-game was, I think, first recorded by A. Chapman in Northumbrian birds, and has since been confirmed by observers in several other areas in Britain. The interesting feature here is that display, communal and very elaborate, repeats the "normal" spring display, except for the immediate preludes to mating. In autumn it arouses no interest in the hens.

We may presume in such cases that a *change* of illumination, increase or decrease, is the effective stimulus for gonadotrophic hormone secretion. Also, in the black-game it appears that the cock is more sensitive to such changes than the grey hen. In view of the experiments reported in your article, which indicate tissue penetration by light as apart from direct retinal stimulation, it is conceivable that the supraorbital wattle of bare skin, found only in the males, has some bearing on this differential behaviour of the sexes in autumn.—I am, etc.,

Physiology Department, Guy's Hospital, S.E.1. E. O. HÖRN.

## Non-specific Mesenteric Lymphadenitis

SIR,—Mr. Ian Aird (Nov. 17, p. 680) has done a great service in reminding the profession that non-specific mesenteric adenitis is an extremely common condition and frequently missed. I would endorse most of what he says, but I would differ from him on the following points.

1. *Pathology.*—I regard these glands as bearing the same relation to the appendix as the tonsillar glands to the tonsil; in cases where the tonsillar glands are enlarged the tonsils usually show no gross abnormality, but tonsillectomy is generally followed by subsidence of the glandular enlargement. If, however, the vitality of tonsillar glands is impaired by allowing a chronic infection to persist, the tubercle bacillus is liable sooner or later to settle in them; this sequence is commonly seen in mesenteric adenitis, where a string of glands is encountered, one or more of them showing caseation or calcification. For this reason I prefer the term "ileo-caecal" to "non-specific" lymphadenitis.

2. *Symptoms and Signs.*—The cases fall into two main groups: (*a*) Acute:—The surgeon is usually asked to operate on an "acute appendix." I would agree with Mr. Aird's description, except that I would go further in the matter of temperature and say that "acute appendicitis" with a temperature of 103–104° immediately raises the suspicion that we are dealing with adenitis rather than appendicitis, although such a temperature by no means rules out the latter. And pain in the right iliac fossa on palpation of the left does sometimes occur. (*b*) Chronic or, preferably, recurrent:—Ileo-colic adenitis is the commonest lesion present in the children who are so often sent up to out-patient departments with a diagnosis of "chronic" or "subacute appendicitis." In these the enlarged glands are frequently palpable, but not necessarily tender.

3. *Prognosis.*—As Mr. Aird says, this is a self-limiting disease, the attacks generally ceasing at puberty or in adolescence. It can usually, however, be cut short by appendicectomy.

4. *Differential Diagnosis.*—(*a*) Acute cases:—A history of previous attacks, although suggestive, can, of course, sometimes be elicited in cases of acute appendicitis. An important point Mr. Aird does not mention is that a clean tongue is the rule in acute ileo-colic adenitis but rare in acute appendicitis. The preoperative differentiation, although satisfying, is mainly academic because in the first condition appendicectomy is beneficial and in the second imperative; in other words, the treatment is the same but the urgency is not. It is much more important that the surgeon should be honest and not try and convince himself that the appendix, the appearance of which in these cases varies from completely normal to somewhat injected, is a "true bill." The really inflamed appendix is practically always turgid with oedema, and even in "true appendicular colic" the inflamed glands, which are the real cause of the pain, will often be found. (*b*) From chronic appendicitis:—I believe that this does not exist in childhood and that enlarged glands can always be found *if looked for* (unless the child has been operated on for an innocuous belly-ache). (*c*) From tuberculous adenitis:—Caseous or calcified glands are obvious at operation, and so are the large masses of tabes mesenterica. Apart from these the presence of tubercle in the commonly encountered glands is impossible to verify without biopsy, which is unnecessary and therefore meddlesome. (*d*) From intussusception:—Ileo-colic adenitis occurring in infants can mimic this very closely. I have seen the diagnosis turn on the presence of blood on the examining rectal finger, only unfortunately it turned out that the blood had been produced by splitting of the anal mucosa by the large forefinger of an eminent paediatrician. However, appendicectomy was followed by subsidence of the grossly enlarged glands.

5. *Treatment.*—The condition will probably subside in time, but if appendicectomy will allow the glands to subside before the tubercle bacillus gets at them it should be performed in all cases. The parents should, however, be warned that the pain is due to the glands and not directly to the appendix, and that, though in the majority of cases the child will have no further trouble, one or even a few more attacks may occur while the inflammation is resolving. Even with obvious tubercle in one or more glands there is no need to mollycoddle the children as tuberculous; take out their appendixes and let them lead a normal healthy life.

The story of my own son illustrates some of the foregoing points. From the age of 6 he had periodic vague abdominal discomfort with no physical signs whatever, but enough to raise in my mind the suspicion of ileo-colic adenitis, particularly when he told me that while away at school he had had one or two short attacks of colic. This year, at the age of 10, he produced a severe attack while we were on holiday in Cornwall, with tenderness and rigidity in the right iliac fossa on direct and left-sided palpation, but with a clean tongue. The attack subsided, so I had him operated on when we returned home. He had a string of enlarged glands, the lowest one calcified, and a normal appendix. He has had one or two lessening attacks since then, but I confidently expect him to be quite well in six months, with no treatment beyond the extra milk obtainable after any major operation.—I am, etc.,

Guildford. G. H. STEELE.

SIR,—Mr. Ian Aird (Nov. 17, p. 680) says that non-specific mesenteric lymphadenitis has found no general acceptance as one of the commonest causes of acute abdominal pain in children. As long ago as 1921 the late Dr. Brennemann of Chicago read a paper before the American Pediatric Society on this subject. This paper was subsequently published in the *Amer. J. Dis. Child.* (1921, **22**, 493), and the condition has since been widely known, as Brennemann's syndrome, as a clinical entity that is recognized by most paediatricians.

Mr. Aird says that the differential diagnosis from tuberculous mesenteric adenitis is not always easy, and that in cases of doubt "it serves better the interest of the patient and community to regard the condition as non-specific unless there is clear evidence of tuberculosis elsewhere." Surely this is one of the conditions where a tuberculin test is essential in differentiation: a negative Mantoux will exclude tuberculous adenitis.

In the diagnosis of appendicitis the rectal examination is often helpful, but no mention is made of this in Mr. Aird's otherwise comprehensive paper.

Mention is made of lymphadenitis and infectious mononucleosis in differential diagnosis, but there is a much commoner condition—abdominal allergy—to which no reference is made. Here the blood count usually shows a leucopenia with an eosinophilia, and this, together with a careful history, will aid in arriving at a correct diagnosis.—I am, etc.,

Warwick. WILFRID F. GAISFORD.

## Recurrence of Infective Hepatitis

SIR,—Current articles in books and journals do not give a clear lead on the question of frequency of recurrences in infective hepatitis. The condition is known to relapse frequently usually between the third and sixth weeks, and is very variable in its severity. That true second attacks take place is hinted at rather than stated dogmatically. I have come across no mention of repeated attacks.

Recently I have been looking after a patient, a soldier aged 33 years. I have inspected clinical records of an illness suffered in November, 1942, notified as true infective hepatitis, and characterized by three weeks of dyspepsia, four days' anorexia and vomit, followed by icterus for eight weeks, palpable liver, bile in the urine for four weeks, and yielding to a low-fat, high-carbohydrate diet. This illness took place in the Middle East. At the time the incidence of epidemic infective hepatitis in the man's unit was high, and there is little reason to suppose that he did not indeed suffer from that condition. Specific note was made of the absence of malaria parasites, negative W.R., absence of exposure to arsenic or other toxic substance. His last inoculation previous to the onset of jaundice was routine T.A.B. and tetanus toxoid five months before. He had had no blood transfusions or serum products.

He remained fit and on duty until September, 1945, when he returned from Italy on leave by air. The day after arrival he felt anorexia and headache and vomited. There had been no jaundice in his unit recently and he attributed his malaise to the effects of the flight. Three days later he was admitted to hospital with icterus, bile in the urine, palpable liver, and complained of headache, anorexia, and tender abdomen after vomiting. The jaundice was of moderate severity, and after eight weeks he was discharged bile-free, liver not palpable, icterus slight. The treatment was by rest and diet only, and lotio calamin. for pruritus. Again the blood W.R. was negative, no malaria parasites found, no toxic substances or transfusions or serum preparations given. In February, 1945, he had T.A.B., and tetanus toxoid inoculations, typhus vaccine in

September, 1945. On convalescence the E.S.R. was 10 mm./1 hour (corrected), no anaemia, serum bilirubin 1.0 mg. per 100 c.cm., icteric index 15 units, and the urine contained a trace of urobilin. The oral hippuric acid excretion test gave an assessment of liver function at 65% of normal. There seems little doubt that this was a fresh infection of infective hepatitis.

It would be interesting to learn of the frequency of this occurrence and the ultimate prognosis with reference to cirrhosis of the liver.—I am, etc.,

JAS. D. P. GRAHAM,
Capt., R.A.M.C.

Military Hospital, Drymen.

### Breast-feeding to Time-table

SIR,—In her letter on breast-feeding (Nov. 24, p. 744) I feel that Dr. Anne Toms lays herself open to criticism. I agree with her that the psychological aspect is important, but I disagree with her proposed remedy.

It is not necessary that everybody's arrangements should have to be upset for the sake of a rigid adherence to the infant's schedule. It is of importance that the baby should be fed regularly; if there must be an irregularity, let it be a regular one—i.e., let the mother begin all the feeds a quarter or a half hour earlier than usual. This will still allow the normal interval, which is essential for successful lactation and for the development of a healthy, thriving baby.

If the baby is howling and half-satisfied, the solution is surely not to feed the baby at irregular intervals. The result in my opinion would be the very state of affairs Dr. Toms is anxious to avoid. It would be wiser to investigate the mother's technique in feeding. Does she use both breasts? Does she empty the breasts after the feed? Does she feed the baby regularly? Does she look after "wind"? What is the state of the bowels? There are many aspects of the problem and they all demand consideration before a solution is suggested.

I think the average husband would be only too glad to give up a mere fifteen minutes to allow the baby to be properly fed. He would be a poor type indeed who would not make that small sacrifice. I fear that, by adopting the suggestions advised by Dr. Toms of making the baby fit the family time-table and not the family fit the baby's schedule, the baby's chances are being jeopardized and it would be a case of "out of the frying-pan into the fire."—I am, etc.,

JOHN L. FARMER.

Rugby.

### Incidence of Breast Abscess

SIR,—I have to thank Dr. Phillis Dingle for the interest shown in two papers of mine dealing with the incidence of breast abscess, and I should like to make one or two comments on her letter (Nov. 24, p. 744).

In my investigation into the incidence of mastitis the area concerned was relatively small and circumscribed—a town of 43,000 inhabitants—so that it was possible to follow up all cases for at least six months after delivery. All mothers in the town are visited by health visitors in the ordinary course of their duties, and during the period of the investigation any case of mastitis occurring in the district was reported. Despite this cases were missed, but some were found at child welfare and other clinics. By this means an incidence of suppurative mastitis of 8.9% was reported. At the same time, for the purpose of the vitamin C experiment described, 250 mothers (all but fifteen were hospital deliveries) were closely followed up for six months after delivery, and in only seven instances was it not possible to do this. These mothers were visited and kept under continuous observation for six months, a questionary was completed at the end of this period, and all cases of mastitis were carefully checked and verified. It is submitted that it was because of the intensive and exhaustive follow-up over a prolonged period (nearly half of the cases occurred after the end of the fourth week) that the high incidence was brought to light.

Dr. Dingle states that she made inquiries at clinics and hospitals and from general practitioners, but admits that only half of these replied. I might point out that if in our investigation only half of the mothers had been followed up or had replied to the questionaries, the incidence would presumably have been considerably less.

Finally I should like to mention that no manipulation of any kind—hand expression, expression by pump, or massage—was carried out in the hospital concerned, and ante-natal measures similar to those described by Dr. Dingle were employed.—I am, etc.,

ANNIE A. FULTON.

Dundee.

### Artificial Pneumothorax Refill

SIR,—I was most grateful for Dr. C. F. Hawkins's views (Nov. 24, p. 742) on local analgesia for pneumothorax refills in criticism of Dr. Alastair Allan's double-channel needle (Nov. 3, p. 607).

I emphatically agree with Dr. Hawkins that local analgesia is to be deprecated, being only necessary until there is an adequate pleural space, which is often present even after the first week. I also have found that patients infinitely prefer to have their refills without "local"; there is no pain (provided the needle is sharp and inserted quickly), and the puncture wound is cleaner and heals more rapidly. On at least one occasion I have given refills normally done by another doctor, and it has happened that the needle has been plunged into the chest before I realized that that particular patient was in the habit of having local analgesia. The patient, instead of being dismayed, has been amazed and gratified that the refill has been devoid of sensation, whereas the raising of an intradermal wheal during local analgesia had been distinctly painful.

I agree also with Dr. Hawkins that the danger of pleural shock is no greater when local analgesia is disregarded. I believe that true pleural shock, though it does exist, is rare and probably occurs only about once in 10,000 pleural punctures. It appears to me to bear no relation to pleural analgesia, but to be connected more with the presence of fear on the part of the patient and allied to the sudden syncope which sometimes occurs after a blow on the larynx or sudden stretching of the anal sphincter. It is usually fatal within a few seconds, and it may be that death takes place from ventricular fibrillation. Cases showing sudden collapse during or after a refill, with coma, convulsions, pallor, and paralysis, are generally due to cerebral air embolism, and though they may be fatal, recovery usually takes place. In this connexion Andosca and Foley (*Amer. Rev. Tuberc.*, Sept., 1945, 52) have analysed some of the literature on pleural shock and cerebral embolism, and stress, among other things, that routine local analgesia for refills should not be employed on account of the danger of novocain poisoning, which has to be distinguished from cerebral embolism and which is sometimes fatal.

Dr. Allan's new needle appears to me to be cumbersome and, indeed, unnecessary, since the use of the Peter Edwards pneumothorax apparatus with a standard single-bore needle enables the manometer to be retained in circuit before, during, and after the refill.—I am, etc.,

PHILIP M. WARD,
Assistant Tuberculosis Physician.

Swansea.

SIR,—I would like to support Dr. C. F. Hawkins, who in his comment (Nov. 24, p. 742) on Dr. A. Allan's plea for anaesthetization for pneumothorax refills urges the greater humanity of refills given without local anaesthesia. I also find that patients invariably prefer to be refilled without its aid. Dr. Hawkins rightly stresses the need for (1) first ensuring an adequate pleural space, (2) an experienced operator, and (3) sharp needles. The technique he describes is, I think, much the same as that employed at most large refill clinics, and is similar to that used at this hospital for at least twelve years. The point that he raises about the possible increased risk of pleural shock is an important one. A large number of refills are given at this hospital (over 5,000 in 1944), and in the last eleven years I have known only one case of air embolism and no case which would fit the description of "pleural shock."

I personally believe that the majority of the catastrophes reported are due to an unrecognized air embolism, though the less startling episodes are often simply "faints." In skilled hands, I do not believe that the risk of air embolism (or of pleural shock, if such exists) is increased by not using local anaesthesia. Nevertheless, if there is any doubt about the pleural space, anaesthesia provides the test of ability to withdraw air into the syringe from the pleural cavity, and should be used in such cases. Those confident individuals who regard an A.P. refill as a simple and foolproof procedure (and there *are* such people), and who do not take the simple but rigid pre-

cautions needed to reduce the risk of air embolism, are asking for trouble and sooner or later get it. In training a succession of assistants in pneumothorax work I always stress the danger of air embolism (not pleural shock) as the ever-present risk which can be reduced to negligible proportions by constant vigilance.—I am, etc.,

RAYMOND C. COHEN,
Deputy Medical Superintendent.
Essex County Hospital, Braintree.

SIR,—I am in complete agreement with Dr. Alastair Allan when he advocates anaesthetization of the needle tract when giving artificial pneumothorax refills (Nov. 3, p. 607). Given skilfully with a fine needle there is practically no pain, and I have had no complaint with this technique, even from children. My method of introducing the pneumothorax needle is by a rotatory action while maintaining a steady pressure. In this way the skin is easily penetrated and the slight "give" when going through the pleura can be distinctly felt. Thus there is no danger of going too far and entering the lung if it happens to be well expanded.

I was surprised at Dr. C. F. Hawkins's statement that "an adequate pleural space . . . is generally confirmed during the third week" (Nov. 24, p. 742). My experience, now going back over fifteen years, is that whether there is going to be adequate space can be estimated in most cases after the first three refills —i.e., within at least a week of the induction. I am convinced that only by screening the patient after every refill, and sometimes, if felt necessary, before giving the refill, can complete and proper control of the pneumothorax be established and trouble avoided.

Regarding the question of pleural shock, I have never had anything remotely resembling this occur in literally thousands of refills, and I am very doubtful whether there is such an entity.—I am, etc.,

S. D. ROWLANDS,
Tuberculosis Medical Officer and Medical Superintendent.
Whinney House Hospital, Gateshead.

SIR,—Having received A.P. refills, personally, regularly for the last six years, and having given them also for nearly as long, I can whole-heartedly support Dr. C. F. Hawkins in his contention that a refill without anaesthetic, once the A.P. is well established, is infinitely preferable to preliminary local anaesthetization.

Raising of the intradermal wheal can be a most uncomfortable process, and it is surprising how often the "local" fails to anaesthetize the pleura. On the other hand, a Morland needle deftly inserted "in one" is usually painless, and I have had painless refills without anaesthetic with much larger needles of the Saugmann type.

I am not yet sure if I have met true "pleural shock," but I have had several cases with syncope, in some of which there have been definite symptoms of embolism. Without exception these cases had preliminary anaesthetization, but in all the possibility of puncture of the lung with the needle cannot be excluded. All responded immediately to inhalation of amyl nitrite from breaking a capsule. Like Dr. Hawkins I am loath to give a refill unless the manometer is in circuit throughout.—I am, etc.,

"T.B. M.O."

## Volvulus of Small Intestine

SIR,—Stimulated by the case history given by Mr. R. Salisbury Woods (Oct. 13, p. 496), I beg to submit the following report of a case of volvulus of the small intestine.

A child aged 9 years was in good health on Aug. 30, 1945. He returned home from an afternoon's play, ate his tea quickly, and shortly afterwards vomited. After vomiting he complained of abdominal pain, which, he said, was not severe; he was put to bed. Later in the evening he vomited several times, and about midnight he vomited some undigested food together with about half a cupful of blood. At 4 a.m. he vomited a small quantity of bright red blood, believed to be about a cupful. The doctor was summoned and he was admitted to hospital at 6 a.m.

On admission his condition was one of profound shock; temperature 97°; pulse 160; blood pressure 45 systolic, diastolic could not be recorded. The tongue was coated. There was central abdominal distension with generalized tenderness, but no visible peristalsis or rigidity. A transfusion of whole blood was set up and allowed to run at a slow drip, and at 10 a.m. the condition was re-assessed after nearly a pint of blood had been given. The patient was then comatose, the signs of shock persisted, the pulse had remained at about 150, and the abdomen was more distended. A diagnosis of intraperitoneal haemorrhage was entertained, but the child was moribund and died at 12 noon.

Necropsy revealed about a pint of blood-stained fluid in the peritoneal cavity. There was a volvulus of the entire small intestine with incipient gangrene extending from a point 2 in. from the duodeno-jejunal flexure to within 4 in. of the ileo-caecal valve. The mesentery had been twisted through 180°, the caecum, which was very mobile, lying in close relation to the duodeno-jejunal flexure. There was marked ecchymosis of the mesentery, the stomach and duodenum contained several ounces of dark altered blood, and the jejunum was distended with altered blood.

Further to the case report of Mr. Salisbury Woods and the letter from Mr. Roberts (Nov. 17, p. 704) it may be remarked that the condition of volvulus of the small intestine receives very scant attention in recent editions of textbooks. In particular Prof. Grey Turner writes (*Modern Operative Surgery*, 3rd ed., 1943, p. 903): "Volvulus of the small intestine is extremely rare; the condition usually involves the whole mass of the small bowel and the exact diagnosis is only made by exploration." Hamilton Bailey (*Emergency Surgery*, 5th ed.) describes only volvulus affecting part of the small intestine —a not unfamiliar sequel to adhesions affecting the small bowel. The interest of this case is chiefly in the initial symptom of haematemesis, and it is reasonable to suppose that had the case presented immediately after the first haematemesis and prior to the development of gross abdominal signs, immediate laparotomy might have been undertaken with success.

I am indebted to Mr. R. Vaughan Payne and Dr. E. Claud Malden for permission to publish this case.—I am, etc.,

BRIAN WEBBER,
Resident Surgical Officer.
King Edward VII Hospital, Windsor.

## Surgical Catgut

SIR,—Since starting in practice in 1910 I have used the same brand of British catgut until the present time. There has never been sufficient variation in the size or strength of the two chief gauges used—namely, 2 and 6/0 (occasionally 3/0 or 4/0) —to cause any serious worry even in threading the Paterson-eyed needles which I use. Neither has there been any sepsis which could unequivocally be attributed to catgut, and no tetanus. At first I prepared my own by the iodine-spirit method and had it tested, because I did not know the methods used by the different firms and so felt insecure; but to-day this is not the case. Other gauges and eyeless needles have also come into use.

Differences in gauge cannot matter very much. I used to see a well-known London surgeon using No. 4 for his ligatures and leave the ends long when I should have used No. 4/0 or No. 6/0 and had the ends cut short. With some methods of preparation the gut shrinks considerably as it dries while waiting to be used and gauging goes by the board. Strength increases with drying.

Incidentally I do happen to notice a great wastage of gut (about one-third) when the tied ends are of equal length. Without the use of a spool this need not occur; with the use of a spool it seldom occurs, especially if the one-handed knot is employed. A useful spool is a piece of glass tubing 1 in. long by 1/2 in. in diameter, costing less than a penny. Makers could most helpfully adopt this or something similar and include it in the ampoule with advantage to all concerned.—I am, etc.,

G. H. COLT.
London, W.1.

## Incision for Appendicectomy

SIR,—I read with interest Mr. Alexander Lyall's article on the treatment of acute appendicitis (Nov. 24, p. 719). In describing his choice of incision for the various types of the disease, Mr. Lyall, to my surprise, makes no mention of the oblique muscle-cutting incision of the late Rutherford Morison. This incision, which is strongly advocated by Prof. Grey Turner, is to my mind probably the best approach to the routine "acute case," and especially to an appendix abscess. For a retrocaecal or retrocolic appendix it seems to afford the maximum of accessibility with a minimum of trauma to the adjacent peritoneum. An appendix abscess can be thoroughly evacuated with ease in the majority of cases, the drainage tube being brought out through the posterior end of the incision, where it is well out of harm's way. If the cut muscles are carefully sutured in two or more layers with interrupted catgut there is

a negligible risk of post-operative hernia. The incision is unsuitable for females, where disease of the pelvic organs must be excluded, also in recent or recurrent attacks in children, where the McBurney approach causes a minimum of trauma and convalescence is thereby correspondingly shortened.—I am, etc.,

Croydon. J. ROSS MACNEILL.

### Therapeutic Effect of Induced Jaundice

SIR,—In the *Journal* of Nov. 17 (p. 677) Dr. Frances Gardner *et al.* quoted my finding that the E.S.R. may become strikingly slower during an attack of infective hepatitis. Dr. E. Muir (Dec. 1, p. 782) appears to assume that this improvement in E.S.R. indicated an improvement in the pulmonary tuberculosis for which my patients were undergoing treatment. I hasten to state that the improvement in E.S.R. was not maintained, and the course of the tuberculous disease was not influenced noticeably, either for the better or for the worse.—I am, etc.,

Cheshire Joint Sanatorium, Market Drayton. A. CLARK PENMAN.

### Prostatic Obstruction

SIR,—May I congratulate Mr. H. Hamilton Stewart on his paper on prostatic obstruction (Nov. 24, p. 724) with his evaluation of the suprapubic and perurethral methods of treatment. To me the different approach to the perurethral method in this country and in America is most striking, for they are almost diametrically opposite. In the States very many surgeons, both experienced and inexperienced, are using the method, and it has been the exception for an American journal of urology not to contain at least one article on it during the past five or six years, whereas in this country the surgeons using the method regularly are few and far between, or so it would appear from the small number of papers on the subject.

This is the more surprising when one has seen the excellent post-operative condition of the patient after the perurethral operation, with his ability to sit out of bed on the first post-operative evening and to walk round the ward on the second day. Also one cannot fail to be impressed by the vast improvement from the patient's point of view in the freedom from pain and absence of a suprapubic wound and drainage tube; and while Harris's method or that more recently published by Wilson Hey (*Brit. J. Surg.*, 1945, **33**, 41) eliminates the drainage tube it cannot eliminate the pain and the resulting partial immobilization of the patient by the suprapubic wound.

With regard to the examination of the patient, I cannot agree with Mr. Stewart that the supine position is the best for bimanual examination of the prostate. In my experience, in the knee-elbow or knee-chest position, particularly if the patient sits back almost on the heels, it is astonishing how easy it is to make the finger touch the hand on the abdominal wall when the bladder is empty, and assessment of the size of the prostate can be formed easily and efficiently except in the very stout. I should have thought that the supine position with the legs in the frog position would inevitably cause some tightening of the abdominal wall.

The two main disadvantages of the perurethral operation are the prolonged period required to acquire the necessary skill and post-operative haemorrhage. Barnes in his book *Endoscopic Prostatic Surgery* states that no surgeon felt proficient until he had treated 100 cases by this route, and personal experience has shown that the speed and efficiency of resection have varied directly with the number of cases treated. I found, for example, that it was not until I had treated about 50 cases that I could remove 40 g. at one sitting, that amount being resected in 30 minutes and the remainder of the operation being occupied by haemostasis. Arising from this point I think Mr. Stewart estimates the size of the normal prostate rather high at 30 to 40 g.; most authors quote it as 20 g., and I have had many cases where the removal of from 10 to 25 g. of tissue has resected the adenomata down to the capsule with abolition of all residual urine.

Post-operative haemorrhage is the complication which necessitates the highly trained nursing staff that Mr. Stewart so rightly insists is essential. A relatively small amount of haemorrhage can cause sufficient clot to block the Foley's catheter, and prevention of this requires much skill and patience on the part of the nursing staff. On the other hand, the recent introduction of "thrombin topical" for instillation into the bladder at the end of the operation has practically removed this complication in most cases. I find now that instead of bladder washouts being performed every 15 minutes for several hours they are performed only every 6 hours, to the great relief of the nursing staff and the added comfort of the patient.—I am, etc.,

Rochdale. A. M. MCMASTER.

### Haematuria after Injection of Rectal Haemorrhoids

SIR,—Dr. W. Kevin Barry states (Nov. 10, p. 668) he has never heard of haematuria after varicose veins injection. Personally I have had no case of haematuria after varicose veins injection, but as a point of interest a surgeon recently injected some rectal haemorrhoids and the patient suffered afterwards from profuse haematuria for a while. Cystoscopy was done but no local lesion could be found, and the haematuria cleared up after a week without further treatment or complication.—I am, etc.,

Ely, Cambs. KENNETH HAZELL.

### Chronic Undermining Ulceration

SIR,—Mr. Aubrey Leacock, in his interesting paper on a case of chronic undermining ulceration treated with penicillin (Dec. 1, p. 765), states he could not find any reference to this type of ulceration in the English medical press. Mr. Leacock might be interested in the following references: "Ulcerating Granuloma of the Pudenda: Treatment by Zinc Peroxide Paste," H. M. Hanschell, *Brit. J. vener. Dis.*, 1944, **3**, 123; and an abstract in the *British Journal of Dermatology and Syphilis*, 1945, **7-8**, 159, of an article, "Microaerophilic Haemolytic Streptococcus Infection causing Destruction of Nose," by M. J. Costello, *J. Amer. med. Ass.*, 1943, **121**, 36.—I am, etc.,

London, W.1. GEOFFREY DUCKWORTH.

### The Harvard System

SIR,—Mr. Alexander Lyall has written such an excellent paper (Nov. 24, p. 719) that it is disappointing to find it marred in two places by defects inherent in the Harvard system of references. The reader unversed in the history of surgery would naturally conclude that John Hilton published his *On Rest and Pain* in 1930, and that Ochsner described his "delayed" treatment in 1934, whereas the correct dates are respectively sixty-eight and twenty-eight years previously.

In spite of your reply to Dr. C. Langton Hewer (Feb, 17, p. 234) I think further protest called for. You stated then that the system gives two pieces of information at once—the name of the author of a statement, observation, or theory, and the date on which these were published. It is evident, however, that the ordinary reader wishing to gain a correct perspective will want to know when these were *first* published, while the research worker or librarian, for easier reference, will prefer the date of the latest edition or article. As in the present instances, these will often be reprints or recapitulatory articles. It seems to me that both cannot be satisfied at once and that this slipshod and cumbersome method of attempting to do so should be abandoned.—I am, etc.,

Salisbury. A. DUFF.

### Disability not Disablement

SIR,—It is not altogether surprising to learn that the response of the war-injured to the invitation to register for employment as "disabled persons" has been poor. The successful rehabilitation of these men and women depends among other things on the acceptance of the fact that though they have a disability or even disabilities such need not result in disablement. In many cases, with suitable surgical appliances, proper training, and appropriate modifications of the industrial process or machine, the effects of even a substantial disability may be so mitigated as to become, if not negligible, merely a minor handicap. True, it requires courage as a rule to achieve this, but it becomes thoughtless, even cruel, to say then to such persons: "In order to improve your chances of employment you must now register as a 'disabled person.'"

A "register of disability" need carry no such stigma of inefficiency. Firms might well be proud to employ beyond the

requirements of the Act numbers of keen men and women with well-compensated disabilities, whereas the employment of a "quota of 'disabled persons'" savours too much of enforced assistance or reluctant charity. We owe it to the men and women concerned to see that the value of this scheme is not jeopardized by the use of inappropriate nomenclature. Clearly it is not only the patient who should learn that "disability" does not spell "disablement."—I am, etc.,

Hill End, St. Albans. W. J. T. KIMBER.

### Food for Europe

SIR,—We often find ourselves telling patients that their ailments are due to deficient food. Whether this is accurate may be open to question, but it is an undisputed fact that European children are dying of starvation. We as doctors may be unintentionally supporting those who argue that as we have not enough food for ourselves we can send nothing abroad. Good organization would improve food distribution and shopping facilities in England, and make possible the dispatch of desperately needed food to starving people. We entreat doctors to use their influence with their patients in support of this measure of relief.—We are, etc.,

JOHN ELAM.
New Barnet. F. JEAN VINTER.

### The "Stamping" of the Guards

SIR,—Before committing themselves further on "stamping" in the Guards, if they have had no close-up view of the subject, may I suggest that members read *Private in the Guards*, by Stephan Graham, published in 1919. The author was one of the greatest of famous pedestrians, before and after his experiences in the Guards Depot at Caterham. It is very evident that in spite of the rigorous training, stamping, etc., he was very proud of having been a Guardsman.

I served in the 'nineties as battalion medical officer in the Grenadier Guards, and never once, despite our long route-marches, did I meet with a case of varicose troubles or other injury due to the training and plenty of fatigue and stamping. The O.C. never once failed to accept my advice in cases of severe blisters or illness of any kind that would reduce a man's efficiency. Doubtless some rather "lame ducks" got into the Guards in the great rush to become a Guardsman in recent years; it is equally certain that they got weeded out at the depot.

The "smartness" of the Guards is known all the world over, and the rare occurrence of trivial injuries must not obscure the great aim of those who have to turn men into Guardsmen—soldiers obvious half a mile away.—I am, etc.,

Bournemouth. W. JOHNSON SMYTH.

SIR,—May I, a civilian, who has served in two wars as an R.M.O. and A.D.M.S., say that I have always had my advice sought and received with the greatest consideration. Equally I have always recognized that the final decision lies with the commander. Is it, in fact, certain that march fracture is caused by stamping the feet? Is it commoner in the Guards than in other line regiments or even in the corps like the R.A.S.C. and R.A.O.C.? My own experience is limited, but I consider that it is commonly caused by route marches and is as much due to poor muscular tone as to any other factor.

Finally, may I say that I am in cordial agreement with Major E. Grey Turner (Nov. 17, p. 707) in his attitude to this matter. After considerable personal experience I can assure Dr. J. W. Perrott (Dec. 1, p. 786) that a battle "jeopardizes the men's health"; I have never advised that one should be cancelled. Equally a battle can be jeopardized by poor discipline. In and out of battle the Guards' discipline is an asset to our nation.—I am, etc.,

Moorgate, E.C.2. F. A. BEARN.

SIR,—The question of stamping very rightly raised by Sir Lenthal Cheatle is perhaps not quite so simple as it looks. Most drills produce co-ordinated sound designedly to facilitate synchronous movement, and therefore this is important up to a point: but it must not be denied that stamping can produce some most undesirable results in unsuitable personnel; also the Service boot cannot be entirely divorced from this question, as it is by no means everybody's footwear.

As one who was S.M.O. of a Marine Headquarters for nearly five war years I did raise the question, suggesting that if there was no adequate substitute it would be better to acclimatize recruits with extra P.T. and games while their physique was putting on that initial improvement which practically always occurs after joining, and then a little later putting them on to drill in boots. One undoubtedly gets cases of flat-foot and hallux valgus which develop and get much worse once certain types are put into boots and drilled on the square, even though they have been postmen or milk roundsmen in civil life!

At the same time, without wishing to give this question a psychiatric twist, I must honestly say that, as with so many other physical defects in actual Service practice, the greatest trouble occurs from the unwilling "trading" on their feet; and it is this last feature and many similar ones which largely render conscripting a man over, say, 33 years a dip in a lucky bag of many blanks and very few prizes.—I am, etc.,

Kingsbridge. L. A. MONCRIEFF,
Surg. Capt., R.N. (ret.).

### Terminological Exactitude in Haematology

SIR,—Mr. R. A. Hughes (Dec. 1, p. 782) asks medical etymologists to produce "a term other than 'macrocyte' for the description of cells of large volume." Surely a task of more immediate importance is to clarify the terms in common use. Thus many writers tell us that pernicious anaemia is a macrocytic anaemia, in which the increase in the average size of the red corpuscles is due to abnormal maturation of the megaloblast. Then, again, Mr. Hughes himself appears to think that a macrocyte is a cell of large volume, but, in spite of etymological considerations, it is a universal practice to use the name to designate a corpuscle (not a cell) of large volume. In "red-corpusculology" the termination "blast" is used for nucleated elements.

It is probably impossible at present to reach unanimity about the characters that entitle a cell to be called a megaloblast, but we can at least be sufficiently logical to call its offspring a megalocyte. Then, if we hold that, in certain conditions, a large normoblast may lose its nucleus we shall do well to call the resulting corpuscle a macrocyte. And let us beware of the slipshod habit of using "red cell" as a synonym for "red corpuscle."

It is hoped that the peace will permit of the formation of a body of haematologists to discuss the complicated and unwieldy terminology of their subject.—I am, etc.,

London, W.1. A. PINEY.

### Shortage of Nurses

SIR,—One point about the shortage of nurses has not been made. The pool of trained nurses is not large enough to bear drainage at one time in all the directions indicated. There may be wastage in the Services, though nurses there hold commissioned rank and are all well diluted by medical orderlies. A more extreme form of wastage in my opinion is the direction and enticement of nurses to industrial nursing. It would be interesting to know the numbers of trained nurses at present occupied, probably below their capacity and skill, in ordnance factories, aircraft and munition works, motor firms, and railway companies. It is surely unreasonable at the present time to have nurses waiting for minor accidents preparatory to sending them to hospital out-patient departments: they might with as much justification be spaced out in "mile-castles" along the roads where most of the serious accidents occur.

And, incidentally, if, as appears likely, nursing is going to remain the sole female "directable" occupation, are new recruits to "serfdom" likely to come forward?—I am, etc.,

Bournemouth. T. R. AYNSLEY.

### Welfare Work a Branch of Medicine

SIR,—I think the difference of view as between Dr. Cicely Williams (Dec. 1, p. 786) and myself is apparent only. I am to blame for not defining "welfare work" before asking the question, "Is welfare work really a branch of medicine?" On Dr. Cicely Williams's definition—"teaching a patient to be healthy"—I subscribe fully to the view that this is a branch of medicine.—I am, etc.,

London, W.1. HORDER.

# Obituary

## A. M. CONNELL, CH.M., F.R.C.S.ED.

We regret to record the death in November of Mr. Arthur M. Connell, consulting surgeon to the Sheffield Royal Infirmary and emeritus professor of surgery in the University of Sheffield.

Born at St. Philip, Barbados, in 1871, he came to England to join University College, London, and after clinical study at University College Hospital took the English Conjoint diplomas in 1895 and the F.R.C.S.Ed. in 1899. He received the Ch.M. degree of Sheffield University twenty years later on his appointment to the chair of surgery. Within a year of qualification he had entered the service of the Sheffield Royal Infirmary and its associated medical school, and in 1899 was elected surgeon. He held the professorship from the end of the war of 1914–18 until 1930. After his retirement from the surgical staff of the Royal Infirmary in 1931 under the age rule, he worked in charge of the physiotherapy department of the orthopaedic clinic and so completed fifty years of service. Connell was highly esteemed as a teacher and loved teaching; his clear-cut museum demonstrations and classes in surgical pathology were famous among students. As a clinician and operator he gave house-surgeons and dressers a daily object-lesson in the principles and practice of surgery.

The outbreak of war in 1914 found him in command of the 3rd Northern General Hospital at Sheffield with the rank of lieut.-colonel, R.A.M.C.; in 1917 he was promoted colonel, A.M.S., and became a consulting surgeon to the Northern Command. He received the Territorial Decoration in 1920, and the King of the Belgians made him an Officer in the Order of Leopold. His devoted work for the Royal Infirmary and the city of Sheffield was commemorated in 1931 by the endowment of a bed in his name after a public meeting held in the town hall, and his colleagues presented the portrait which now hangs in the board room recalling the large part he took in modernizing the surgical practice and equipment of the hospital.

Arthur Connell joined the British Medical Association in 1901. He held office as secretary of the Section of Surgery at the Sheffield Annual Meeting of 1908, and vice-president of that Section at Aberdeen in 1914; he was also secretary of the Navy, Army, and Ambulance Section at the London Meeting of 1910.

## R. A. CLAYTON RIGBY, L.R.C.P.&S.ED.

Nottingham has sustained a sad loss through the death of its pioneer radiographer, Dr. Clayton Rigby, which occurred after a brief illness on Sept. 26. For over 25 years he had been associated with the growth and development of the radiological department at the Nottingham General Hospital almost from its origin. He saw and was instrumental in its expansion from one small room till it has become a great specialized department with all its various ramifications—deep *x*-ray therapy, radium, etc. Not only at the General Hospital, but also at the Children's, the Ransom Sanatorium, as well as the Nottingham City Hospital and even the Boston Hospital in Lincolnshire, was his advice sought. He was senior medical officer at the Nottingham Corporation ultra-violet clinic. All this extending field of work eventually told its tale, and the ever-increasing strain of the war years has no doubt been the main factor in robbing Nottingham and the county of one of her most experienced and valued citizens; his passing has left an irreplaceable blank. He was a singularly quiet and dignified man, and these traits combined with his vast experience only served to enhance the authority and experience of his opinion to all who had the privilege of seeking his advice.

Rupert Alan Clayton Rigby was born in Ceylon, his father being chaplain to the tea planters. He was educated at Magdalen School and Westminster, and afterwards went to Edinburgh, where he took the Scottish triple qualification. He joined the B.M.A. in 1911, was a Fellow of the Royal Society of Medicine, a member of the British Institute of Radiology and a former medical officer of the *x*-ray and electro-therapeutic department of the Queen's Hospital, Sidcup. During the 1914–18 war he was captain in the R.A.M.C. and radiologist at Salonika, and became president of the Nottinghamshire Branch of the Salonika Reunion Association.

## ARTHUR EDMUNDS, C.B., M.S., F.R.C.S.

Mr. Arthur Edmunds, who retired from surgical practice some years ago to live in Kent, died on Nov. 29 at King's College Hospital, London, where he was for a long time a leading figure. Born on April 17, 1874, son of Joseph Edmunds, he was educated at King's College and Hospital, and in the course of a brilliant student career was awarded the university exhibition in zoology and the university scholarship in physiology at the examinations for the B.Sc.Lond. At King's he won the Sambrooke exhibition, three scholarships, and two prizes. At the intermediate M.B.Lond. he won the exhibition and gold medal in physiology and first-class honours in materia medica, and then, after qualifying in 1900 and acting as house-surgeon, he obtained honours in obstetrics at the Final M.B., and the university scholarship and gold medal at the B.S. in 1901, and passed the M.S. examination in 1903. After demonstratorships in the physiological department at King's, Edmunds served as Sambrooke surgical registrar for four years and senior surgical registrar and tutor from 1910 to 1912, when he was appointed assistant surgeon. He reached the full staff in 1919, and was elected consulting surgeon on his retirement in 1934.

He held the temporary rank of surgeon rear-admiral as consulting surgeon to the Royal Navy during the war of 1914–18, and was created C.B. At the Royal College of Surgeons, whose Fellowship he had obtained in 1901, he was Hunterian Professor in 1926 and 1933. In his early days of practice he served for a time on the visiting staffs of the Paddington Green Children's Hospital and the Royal Northern Hospital. He was elected a Fellow of King's College in 1931.

In 1911 Arthur Edmunds was jointly responsible, with T. P. Legge, for revising and largely rewriting the second edition of Watson Cheyne and Burghard's *Manual of Surgical Treatment* in five volumes; and, besides numerous papers on scientific and surgical subjects, he published in 1908 *Glandular Enlargement and Other Diseases of the Lymphatic System.*

## MARGARET BALFOUR, C.B.E., M.D., F.R.C.O.G.

A long life of service on behalf of Indian women is recalled by the death of Dr. Margaret Balfour, which took place at her home in South-East London on Dec. 1. She had spent more than thirty years in India, and even after her retirement from official positions in that country she still interested herself in Indian social conditions and did whatever she could for the Indian mother and her child.

Margaret Ida Balfour was born eighty years ago, the daughter of Robert Balfour, a chartered accountant of Edinburgh. She had her medical training at the School of Medicine for Women, Edinburgh, and qualified in 1891. Then after taking the M.D. of Brussels she went out to India as medical officer in charge of the zenana hospital at Ludhiana in the Punjab. She was one of the most enthusiastic supporters of the great work undertaken by Lady Dufferin's Fund. This work had been inaugurated about seven years previously, during the Earl of Dufferin's viceroyalty. It it said that Queen Victoria herself specially charged the Vicereine to do something to help the women of India in sickness. The aim of the Fund was to provide better medical treatment by the establishment of hospitals and dispensaries and in other ways, especially for the women who were prevented by the restrictions of purdah from being attended by male doctors.

At Ludhiana a medical school for women was founded two years after Margaret Balfour's arrival, but at that time there were only one or two Indian women qualified in medicine, and the vastness of the social need might well have depressed less ardent spirits than Margaret Balfour and Mary Scharlieb and others who determined to bring the resources of Western knowledge and skill to their Indian sisters, especially in childbirth. Women doctors were brought out from Britain, as well as nurses and midwives, and later Indian women were admitted to medical schools and colleges. After three years at Ludhiana Margaret Balfour became medical superintendent of the Dufferin hospital at Nahan, also in the Punjab, where she remained until 1902, and then for eleven years she was medical superintendent of the Dufferin Hospital at Patiala. By the time she had completed her term there modern child welfare was making headway in India, infant welfare centres were multiplying, and ante-natal work was becoming appreciated. For two years after completing her task at Patiala she worked as assistant to the inspector-general of civil hospitals in the Punjab, but in 1916 she returned to the Countess of Dufferin's Fund and served it for eight further years as joint secretary at Delhi and Simla. During that time, to facilitate administration, a separate Women's Medical Service for India was created.

though still under the council of the Fund, and of this service she was chief medical officer from its start until 1924. In that year she ended her official work in India, but not her labours on behalf of Indian women. In 1929 she, with Dr. Ruth Young, published a history of the work of medical women in India—a very lucid record, moderate in its expression, but setting out the plain facts of the social conditions as she had seen them during her long experience. In the following year she published the results of an investigation she had undertaken into maternity conditions among women mill-workers in Bombay. She had specially investigated the diet of pregnant women in that Province, and one interesting observation was that when half the calories of the women's diet were derived from polished rice the proportion of premature births went up to 20%, and when half the calories were derived from wheat there were in her sample no cases of premature birth at all.

On her return to this country she pleaded on many occasions for the employment of more women doctors in India and for a sufficient supply of drugs. She also interested herself in the care of the expectant and nursing mother under industrial conditions in this country. The Council of Action published in 1935—and republished in 1938—a pamphlet by her and Dr. Joan Drury setting out the results of an investigation of motherhood in special areas of the county of Durham and Tyneside. The inquiry was conducted on sociological rather than on medical lines, and special attention was paid to the diet of the expectant mothers. She became in 1929 a Fellow of the Royal College of Obstetricians and Gynaecologists, and from time to tmie she published papers on obstetrics and infant care.

In 1920 Dr. Balfour received the Kaisar-i-Hind medal for conspicuous service in India, and in 1924 she was made a C.B.E. She was a member of the National Council of Women and of the Medical Women's Federation. She joined the British Medical Association as long ago as 1899, and in 1932 she assisted the Association on a committee which it set up to consider the medical aspects of the report of the Indian Round Table Conference. In the three following years she was a member of the I.M.S. Committee of the Association and of the Dominions Subcommittee on India. She retained remarkable vigour of mind and body until within a few days of her death.

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Dr. KENNETH STOCKS BROWN, who died at Grange-over-Sands, Lancashire, on Nov. 4, after seven years of failing health, studied medicine at the University of Edinburgh and graduated M.B., Ch.B. in 1920. He served as resident house-physician and house-surgeon at Leith Hospital, was then appointed house-physician at the Royal Infirmary, Sunderland, and from 1923 to 1931 held the post of assistant pathologist there. He next became assistant R.M.O. at the Westmorland Sanatorium, Grange-over-Sands, but chronic chest trouble forced him to relinquish that in 1938 and live the life of a comparative invalid. Dr. Kenneth Brown joined the B.M.A. in 1922 and was a member of the Association of Clinical Pathologists.

Dr. BURGESS MACPHEE, a retired consultant tuberculosis officer of the Lancashire County Council, died on Nov. 10, aged 68, at Chichester, where he had recently gone to reside after leaving Blackburn. He was born in the Glasgow district in 1877, qualified as M.B., Ch.B. (with distinction) at Glasgow University in 1900, and took the Cambridge D.P.H. in 1912. After graduation he devoted five years to general practice, and then held appointments under the Metropolitan Asylums Board, Surrey County Council, Glasgow Corporation, and at Southampton. He joined the staff of the Lancashire County Council in 1913, and until he left the county service on superannuation in February, 1942, he held the post of consultant tuberculosis officer of a dispensary area (population 330,000) in East Lancashire, with dispensaries at Accrington, Nelson, Stacksteads, and Darwen, and a pulmonary hospital at Withnell, near Chorley. MacPhee played an important part in building up the Lancashire County Scheme for the prevention and treatment of tuberculosis. He was a model consultant physician and a man of sterling character. Held in very great esteem by his medical colleagues, he was much missed when he retired three years ago. He leaves a widow, two sons, and one daughter; a third son, in the R.A.F., was lost over Germany towards the end of the war.

Dr. EVELYN B. JACQUES, who died in London on Nov. 21, was the wife of Dr. F. V. Jacques, who was announced as being released from internment in Japanese hands in the *Journal* of Sept. 29. Evelyn Bessie Salter studied medicine at the University of Bristol, graduating M.B., Ch.B. in 1919, and took the D.T.M.&H. two years later, after serving as resident obstetric officer at the Bristol Royal Infirmary. She joined the Malayan Medical Service as lady medical officer at Seremban. Dr. Ann Harling writes: I only knew Evelyn Jacques for the last three years of her life, but I formed a deep admiration and affection for her. Others may be able to tell of her exciting and unusual childhood on board her father's steamship, of scanty schooling except from her mother, and at schools all over the world, until she was 15 years old; of her student and postgraduate years at Bristol during and after the first world war, and of twenty years with her husband in the Malayan Medical Service. I learnt only a little of these things, for she was not one to speak of herself. She was a most kind, generous, and loyal colleague, a very good doctor, much loved by many people here in Worcester Park. She bore the years of her husband's internment in Singapore with great fortitude and an irresistible hope that he was alive and would come home again. When he did come home in September of this year she had already suffered from months of the illness from which she died. She had to know both the diagnosis and the prognosis (it was a thing which could not long be hidden from a medical mind) and she lived through this experience with inspiring courage and gaiety of spirit. During the last few weeks she displayed the greatest thoughtfulness for others in spite of very severe pain and enormous doses of morphia. Her life and her death have been an inspiration to all who had the honour to know her. Our deepest sympathies go to her husband, Dr. Frederick Jacques, and her four children, who have all shown the same courage and fortitude.

Mr. JOHN WILLIAM HEEKES, for twenty years on the honorary staff of the Royal Hospital, Richmond, Surrey, died at his home in Barnes on Nov. 22, aged 73. He was educated at the City of London School and King's College School, and at Charing Cross Hospital, where, after qualifying in 1906, he became house-surgeon and resident obstetrical officer and clinical assistant in the throat and ear and the women's departments. During the war of 1914–18 he held a commission as captain in the R.A.M.C., serving with the B.E.F. in France and with the Mediterranean Force, mainly in Malta, and afterwards as surgical specialist at the Military Hospital, Belmont. He graduated M.B., B.S.Lond. in 1917, and was for a time surgeon at the Queen Alexandra Military Hospital, Millbank. Returning to practice in the Thames Valley he was appointed surgeon and gynaecologist at the Royal Hospital, Richmond, and visiting surgeon to the Richmond Infirmary. In 1929 he became examiner in gynaecology for the General Nursing Council. He had joined the B.M.A. in 1909, was chairman of the Richmond Division in 1931–2, and represented it at the Annual Meeting at Bournemouth in 1934. Heekes wrote a number of papers on surgical subjects, which were published in these columns between 1907 and 1924, and during the present war he worked as surgeon attached to the Emergency Medical Service.

Industrial medicine has lost one of its most distinguished pioneers with the passing of Dr. W. DAVID JENKINS, chief medical officer to the South Metropolitan Gas Company. He was a student of the Middlesex Hospital, and before studying medicine took a B.A. degree with honours in the University of Wales. At the outbreak of the war of 1914–18 he volunteered as a combatant and was commissioned in the Royal Artillery, and saw active service until he was invalided home in December, 1917. He then returned to his medical studies and qualified as M.R.C.S., L.R.C.P. in 1921. Subsequent to this he practised in South Wales and was commissioned as a Justice of the Peace in the County of Glamorgan. Dr. Jenkins was one of the founder members of the Association of Industrial Medical Officers, and gave good service as a member of the executive committee. He joined the South Metropolitan Gas Company in 1932, and with the company's close support introduced a medical service of the highest order. He studied the occupational hazards of the gas industry with an enthusiasm which was most infectious, and became a leading authority on the causation, prevention, and treatment of pitch and tar cancer. His contributions to medical knowledge were made more by the spoken than by the written word. A few weeks before his death he arranged with the collaboration of his company a practical demonstration of the industrial problems in this field for the advisory panel on dermatological problems in industry to the Minister of Labour and National Service. He was a Freeman of the City of London, and was intimately connected with the work of the St. John Ambulance Brigade in London. At the time of his death he was surgeon to the Brigade in the County of London. He was a prominent member of the Savage Club. Dr. Jenkins was a man of outstanding personality, of great courage and charm, and possessed an aptitude for the clear expression of his opinions. With all this, and his specialized knowledge in the field of industrial health, he will be remembered by all who worked with him, whether as a worker, employer, or as a medical colleague, until they too pass on, as a man of great humanity, honesty, and unselfishness, and we his friends for many years will feel the loss of his impartial counsel and courageous presence.—A. J. A. and E. R. A. M.

# Medical Notes in Parliament

### Sale and Purchase of Practices

Mr. SOMERVILLE HASTINGS on Dec. 6 asked the Minister of Health whether he was prepared to offer any advice to doctors demobilized from the Forces as to the purchase of a practice.

Mr. BEVAN replied: The Government have not yet finally decided upon the proposals which they will be submitting to Parliament for a National Health Service. They believe, however, that it will be incompatible with the provision of an efficient service that the future exchange of medical practices and the creation of new practices within that service should be left entirely unregulated and that no effective steps should be taken to secure a proper distribution of doctors to fit the public need. They appreciate that intervention in this field—in whatever form it may take—will probably have the effect of preventing the sale and purchase of the practices of doctors taking part in the new service, and the Government therefore think it right to give warning of this probability at once and in advance of the formulation of their full proposals. At the same time, and in order to allay the natural anxieties of doctors already in practice or now coming into practice from the Forces or elsewhere, the Government wish to make it clear that there will be an appropriate measure of compensation to doctors in respect of loss of capital values directly caused by the new arrangements. It is intended that discussions should be undertaken immediately with the profession's representatives with regard to the steps to be taken to give effect to this decision.

Mr. HASTINGS asked if Mr. Bevan could suggest what occupation or what branch of the profession medical men returning from the Forces should take if they were not to buy practices. Mr. BEVAN said it was hard to frame precise proposals in this matter ahead of legislation. He had informed doctors that it was highly improbable that he would permit the sale and purchase of practices in future, subject to the proposals laid before Parliament. However, arrangements would be made with the medical profession immediately in order to deal with individual difficulties of doctors returning from the Services.

Mr. WILLINK asked whether the Minister was aware that this vague and menacing statement would cause the greatest possible anxiety and distress among a section of the population to whom the goodwill they had built up was their major asset, and that many of Mr. Bevan's present colleagues in the Government agreed that this was a matter of great complication and not essential to the introduction of a National Health Service. Mr. Willink further asked what Mr. Bevan meant by his allusion to a method of regulating the distribution of doctors.

Mr. BEVAN said he had every reason to believe that the announcement just made would be received with great satisfaction by most doctors; that most of the best elements of the profession regarded the sale and purchase of practices as extremely undesirable; and that they would be very glad indeed that he was about to discuss with them the conditions in which this practice was to cease. He added that his answer did not apply to dental surgeons.

Colonel STODDART-SCOTT inquired whether the reply meant that doctors who could no longer purchase practices would no longer be able to choose in what part of the country they wished to practise. Did it mean that they would be directed or posted in future? Mr. BEVAN asked Colonel Stoddart-Scott to await the full proposals.

Major LLOYD gave notice that he proposed to raise this matter on the adjournment. Mr. SPEAKER stated that as the matter involved legislation it was bound to be out of order on the adjournment.

### Purchase Tax on Doctors' Cars

Major TUFTON BEAMISH on Nov. 29 moved a new clause to the Finance Bill. This proposed that motor cars for use by registered medical practitioners or by veterinary surgeons should be exempted, like ambulances and invalid carriages, from the Purchase Tax. Major Beamish said he had asked the Minister of Health for his support, but had received a letter saying this could not be given and that doctors were not unfairly treated in the matter. The Minister of War Transport and the Chancellor of the Exchequer had said that there were administrative difficulties in the way of the concession. Mr. Dalton had pointed out that the tax was charged at the wholesale stage when the ultimate purchaser was unknown, but Major Beamish argued that it would be easy to refund the tax to doctors who had bought cars subject to Purchase Tax. If doctors did use the cars for pleasure in their scanty leisure hours the House should not begrudge them. Doctors were being demobilized all too slowly. In civil life there was one doctor to 1,300 or 1,400 persons; that proved that a car was indispensable to a doctor. The argument that doctors might resell the car at a considerable profit was invalid, because there were stringent conditions of resale. County medical committees could ensure that only practising doctors were afforded this relief.

Mr. GLENVIL HALL said the amendment as drafted was unworkable. It meant that a doctor who wished to go anywhere, save on a professional visit, must keep two cars or walk. The tax was imposed at the wholesale stage, when it was impossible to know who would buy or use the car. Doctors deserved all the sympathy and help the House could give them, but it could not be given this way.

The proposed new clause was negatived.

### Physiotherapists in N.H.S. Consultations

On Nov. 29 Sir IAN FRASER asked the Minister of Health if he would give the profession of physiotherapy the same opportunity of consultation as he had offered to the medical profession before he introduced his proposed National Health Service Bill. Mr. BEVAN: I shall be glad to consider any views which the physiotherapists care to put before me.

### Empire and United Kingdom Casualties

Total casualties suffered by the armed Forces of the British Commonwealth and Empire from Sept. 3, 1939, to Aug. 14, 1945, were given by Mr. Attlee as 1,246,025, including 353,652 killed and 475,070 wounded. Casualties for the United Kingdom were 755,257, including 244,723 killed and 53,039 missing, 77,090 wounded, and 180,405 prisoners of war. Casualties to merchant seamen included 30,189 deaths.

### Doctors in East Africa Command

Colonel PRICE-WHITE on Dec. 4 asked the Secretary of State for War if he was aware that under present military establishments and commitments in East Africa Command at least one-half of the staffs of medical services in that command were surplus to requirements. In view of the shortage of civilian doctors and staffs in Britain he asked the Minister to arrange for the early repatriation and release of those now so redundant. Mr. LAWSON denied that the position was as stated. He said that in addition to the British troops there was a very large number of Colonial troops for whom medical attention had to be provided by the R.A.M.C. Certain reductions were recently ordered, and all medical officers in Group 24 or earlier were being returned for release in December, but it would be quite impossible to reduce by anything approaching 50%.

*Milk for the Tuberculous.*—Tuberculous patients are allowed a priority supply of fourteen pints of milk a week in addition to normal rations and allowances. Sir BEN SMITH is advised that this provision is adequate for their needs. It is fixed on the advice of medical experts. Mr. BEVAN states that tuberculous patients in civil hospitals are entitled to special supplements of ordinary civilian rations and to two pints of milk a day in addition. He is advised that this dietary compares favourably with that laid down for military hospitals.

*Stakehill Detention Barracks.*—Mr. DRIBERG on Nov. 27 referred to Stakehill Detention Barracks and to a case there last year of an apparently fit man who went into the barracks and was dead within three days. No inquest was held. The relatives saw the body with the forehead bruised and a bruise on the neck. Major WYATT said death took place after this man had been made to run a mile in seven minutes wearing full kit. On entering the camp he had been passed by the camp doctor as fit to take such exercise. He should not have been passed as fit if he was going to collapse and die of heart failure after running a mile. Dr. MORGAN asked the War Office to see that proper arrangements were made in detention camps from a psychiatric point of view. Few psychiatrists attended the camps. Mr. LAWSON said it was necessary that the inquiry which had been ordered should be private. He did not exclude a public inquiry later into the general question of Stakehill.

*Immunization of Children.*—Mr. BEVAN states that returns received from all but a few local authorities indicate that during the six months to June 30, 1945, 201,465 children under 5, and 65,469 between 5 and 15, were immunized under local authority arrangements in England and Wales: that of 6,168 children notified as suffering from diphtheria 1,959 were immunized and 4,209 unimmunized; and that of 289 children who died from diphtheria 24 were immunized and 265 unimmunized. He adds that a true statistical assessment of the results of immunization in the current year must await the Registrar-General's conclusions, which are normally published in the Ministry's annual report.

*Medical Students' Fees.*—Mr. BEVAN said on Nov. 29 that he was not empowered to make grants to relieve students taking recognized courses for a degree in medicine of the greater part of their fees. Assistance was available to medical students from various sources, including scholarships awarded by the Ministry of Education, by local education authorities, and by medical schools.

*Public Assistance Mental Patients.*—Mr. BEVAN stated that on Jan. 1, 1945, there were under the Lunacy and Mental Treatment Acts 10,550 persons in public assistance institutions or wards of municipal general hospitals approved for the purpose by local authorities under Section 19 of the Mental Treatment Act. On the same date there were 9,852 mental defectives in public assistance institutions which had been approved for the purpose under Section 37 of the Mental Deficiency Act, 1913. A considerable proportion of these patients required only to be looked after. Those needing treatment received it from the medical officers of the institution.

### *Notes in Brief*

Mr. Attlee said on Dec. 3 that he hoped to make another statement soon on the control of atomic energy.

Sir Stafford Cripps states that in 1935, the latest year for which figures are available, 20% of the British production of drugs, medicines, and medicinal preparations was exported.

## EPIDEMIOLOGICAL NOTES

### Discussion of Table

In *England and Wales* infectious diseases were more prevalent, the rises over last week's totals being: scarlet fever 237, acute pneumonia 159, measles 50, dysentery 43, whooping-cough 29.

Scarlet fever increased mainly in the Midlands, and to a less degree in London and the south-east.

Diphtheria notifications in Lancashire showed an increase of 19 cases over last week's total, but fell by 15 in Yorks West Riding and by 11 in London. The chief centres of infection are in Liverpool C.B. 56, and Birmingham C.B. 31, these two cities accounting for over one-eighth of the total notifications.

Pneumonia was prevalent in the north.

There were 40 more cases of measles in Suffolk than last week.

No fresh outbreak of dysentery was recorded during the week. The largest returns were London 32, Lancashire 28, Warwickshire 21, Glamorganshire 20, Middlesex 19, Surrey 14, Gloucestershire 12.

In *Scotland* diphtheria, with 206 notifications, reached the highest level of recent months. The largest returns were Glasgow 66 and Edinburgh 28. The total notifications for acute primary pneumonia and for scarlet fever were respectively 33 and 15 higher than last week.

In *Eire* the outbreak of measles in Dublin C.B. continued, notifications mounting from 113 to 146. The incidence of diphtheria for the whole country fell by 7 and of whooping-cough by 6, but that for scarlet fever rose by 15. In Dublin the figure for diarrhoea and enteritis rose by 12 to a total of 45.

In *Northern Ireland* scarlet fever, with 53 notifications, is more prevalent than during the past six months.

### Infantile Paralysis in Queensland

An outbreak of infantile paralysis centred in Brisbane has spread throughout Queensland; 191 cases with 5 deaths have been reported; 60 of the cases occurred in Brisbane.

### Quarterly Returns for Scotland

The birth rate during the September quarter was equivalent to 16.4 per 1,000, which is 1.1 below the average of the five preceding third quarters and the lowest rate ever recorded in a third quarter. Infant mortality was 46 per 1,000 registered live births—14 below the five-years average and much the lowest rate ever recorded in Scotland. The previous lowest infant mortality for any quarter was 55, this level being reached on three occasions. The maternal mortality, 2.2 per 1,000 live births, was the lowest ever recorded for any quarter. The general death rate, 10.9 per 1,000, was 0.8 below the average of the five preceding third quarters and was the lowest recorded for any quarter since 1939. Deaths from the principal epidemic diseases numbered 67, and included 20 from diphtheria, 15 from measles, 13 from cerebrospinal fever, and 10 from whooping-cough. Tuberculosis caused 850 deaths, the death rate from all forms being 70 per 100,000 54 from respiratory tuberculosis). The former rate is 8 below that for the third quarter of 1944, and the latter is 5 below; the death rate for respiratory tuberculosis was the same as, while that for all forms was 3 below, the five-years average. The marriage rate was 10.5 per 1,000; only on two occasions have higher rates been recorded for any quarter—those for the third quarters of 1939 and 1940, when they were 12.4 and 12.3 respectively.

### Week Ending December 1

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,879, whooping-cough 1,384, diphtheria 676, measles 501, acute pneumonia 746, cerebrospinal fever 45, dysentery 231, paratyphoid 6, typhoid 12, poliomyelitis 20.

No. 47

## INFECTIOUS DISEASES AND VITAL STATISTICS

**We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Nov. 24.**

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

*Figures of Births and Deaths, and of Deaths recorded under each Infectious disease, are for:* (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

| Disease | 1945 (a) | 1945 (b) | 1945 (c) | 1945 (d) | 1945 (e) | 1944 (Corresponding Week) (a) | 1944 (Corresponding Week) (b) | 1944 (Corresponding Week) (c) | 1944 (Corresponding Week) (d) | 1944 (Corresponding Week) (e) |
|---|---|---|---|---|---|---|---|---|---|---|
| Cerebrospinal fever | 32 | 5 | 17 | — | — | 41 | 4 | 19 | 2 | 2 |
| Deaths | | — | — | | | | — | 1 | | |
| Diphtheria | 654 | 39 | 206 | 84 | 20 | 616 | 23 | 209 | 133 | 19 |
| Deaths | 6 | — | 1 | 3 | 1 | 8 | 1 | 1 | 2 | — |
| Dysentery | 223 | 32 | 50 | — | — | 380 | 44 | 82 | 2 | 1 |
| Deaths | | | | — | — | | | | — | — |
| Encephalitis lethargica, acute | 1 | — | — | — | — | 1 | — | — | — | — |
| Deaths | | — | | | | | — | | | |
| Erysipelas | | | 40 | 7 | 2 | | | 62 | 9 | 3 |
| Deaths | | 1 | | | | | — | | | |
| Infective enteritis or diarrhoea under 2 years | 38 | 5 | 11 | 52 | 2 | 38 | 2 | 9 | 28 | 1 |
| Deaths | | | | 9 | | | | | 4 | |
| Measles* | 453 | 42 | 81 | 154 | 4 | 7,137 | 110 | 425 | 19 | 259 |
| Deaths | 1 | — | — | — | — | 10 | — | — | — | — |
| Ophthalmia neonatorum | 68 | 6 | 12 | — | — | 81 | 5 | 16 | — | — |
| Deaths | | | | | | | | | | |
| Paratyphoid fever | 10 | — | 2(B) | — | — | 1 | — | 5(B) | — | — |
| Deaths | — | — | — | — | — | — | — | — | — | — |
| Pneumonia, influenzal† | 579 | 41 | 5 | 4 | 1 | 755 | 24 | 10 | 1 | 8 |
| Deaths (from influenza) | 25 | 5 | 1 | — | 1 | 27 | 2 | 6 | — | — |
| Pneumonia, primary | | 40 | 181 | 26 | 12 | | 34 | 314 | 14 | 13 |
| Deaths | | | | 11 | | | | | 9 | |
| Polio-encephalitis, acute | 4 | — | | | | 2 | — | | | |
| Deaths | | — | | | | | — | | | |
| Poliomyelitis, acute | 15 | 2 | — | 1 | — | 10 | — | — | 2 | 2 |
| Deaths | | — | | | | | — | | | |
| Puerperal fever | | 1 | 14 | | — | | 6 | 15 | | — |
| Deaths | | | | | | | | | | |
| Puerperal pyrexia‡ | 132 | 12 | 8 | — | — | 165 | 11 | 17 | — | — |
| Deaths | | — | | | | | — | | | |
| Relapsing fever | — | — | | | — | — | — | | | — |
| Deaths | | | | | | | | | | |
| Scarlet fever | 1,911 | 155 | 284 | 34 | 53 | 2,350 | 60 | 348 | 32 | 117 |
| Deaths | 1 | — | — | — | — | 1 | — | — | — | — |
| Smallpox | — | — | — | — | — | — | — | — | — | — |
| Deaths | | | | — | — | | | | — | — |
| Typhoid fever | 7 | — | 1 | 4 | — | 4 | 1 | — | 9 | 1 |
| Deaths | — | — | — | — | — | 1 | — | — | — | — |
| Typhus fever | 2 | 1 | — | — | — | — | — | — | — | — |
| Deaths | | | | — | — | | | | — | — |
| Whooping-cough* | 1,232 | 62 | 61 | 26 | 8 | 1,388 | 56 | 151 | 41 | 10 |
| Deaths | 7 | — | 1 | — | — | 9 | 1 | 1 | 1 | — |
| Deaths (0–1 year) | 358 | 51 | 47 | 29 | 17 | 358 | 41 | 63 | 28 | 13 |
| Infant mortality rate (per 1,000 live births) | | | | | | | | | | |
| Deaths (excluding still-births) | 4,628 | 707 | 605 | 193 | 135 | 5,118 | 760 | 697 | 220 | 132 |
| Annual death rate (per 1,000 persons living) | | | 13·7 | 12·5 | § | | | 16·0 | 14·3 | § |
| Live births | 6,488 | 954 | 748 | 341 | 227 | 6,772 | 598 | 907 | 315 | 251 |
| Annual rate per 1,000 persons living | | | 15·0 | 22·0 | § | | | 18·4 | 20·4 | § |
| Stillbirths | 188 | 20 | 23 | | | 192 | 11 | 37 | | |
| Rate per 1,000 total births (including stillborn) | | | 30 | | | | | 39 | | |

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to movements of population, birth and death rates for Northern Ireland are still not available.

# Medical News

The fourth annual general meeting of the Anglo-Soviet Medical Council will be held on Tuesday, Dec. 18, at 4.30 p.m., at the Royal Society of Medicine, 1, Wimpole Street, W. Prof. Arnold Sorsby, F.R.C.S., will speak on Soviet medicine.

A meeting of the Eugenics Society will be held at the rooms of the Royal Society (Burlington House, Piccadilly, W.) on Tuesday, Dec. 18, at 5.30 p.m., when Dr. D. V. Glass will give an address on "Aspects of the Development of Population Policy." All interested are invited to attend.

A meeting of the Colour Group of the Physical Society will be held at 3.30 p.m. on Wednesday, Dec. 19, in the small Physics Lecture Theatre, Imperial College, Imperial Institute Road, S.W., when a lecture on "Colour Discrimination, the Visibility Curve, and the Trichromatic Theory" by W. S. Stiles, D.Sc., will be followed by an informal discussion.

A meeting of the British Institute of Radiology will be held at 32, Welbeck Street, W., on Thursday, Dec. 20, at 8 p.m., when a paper by Mr. M. H. Jupe and Mr. L. A. Kemp on "The Physicist in the Radio-diagnosis Department" will be read. On Friday, Dec. 21, at 5 p.m., there will be a meeting of medical members at the same place. The Diagnosis Section of the Faculty of Radiologists will meet at the Royal College of Surgeons of England on Friday, Dec. 21, at 2.30 p.m., when there will be a discussion on "The Radiology of Non-malignant Intracranial Lesions."

The London County Council announces the retirement of Sir Thomas Carey Evans, F.R.C.S., medical superintendent of Hammersmith Hospital. His retirement is on medical grounds. The Council states that Sir Thomas Carey Evans, who entered its service in 1931, has shown himself to be a most capable organizer and medical administrator. "His professional ability, tact, and charm of manner have impressed all those with whom he has worked and have greatly contributed to the establishment of the amicable relations which exist between Hammersmith Hospital and the British Postgraduate Medical School."

Lieut.-Col. the Right Hon. Walter Elliot, F.R.S., F.R.C.P., of Bonchester Bridge, Hawick, has been appointed a Deputy Lieutenant of the County of Roxburgh. Dr. E. W. Jones, of Llety'r Eos Llanfairtalhaearn, and Seibiant, Pontllyfni, has been nominated Sheriff for the County of Caernarvonshire.

The appointment of Dr. Stuart I. A. Laidlaw as Medical Officer of Health for Glasgow in succession to Sir Alexander Macgregor, who retires in April, has been confirmed by the City of Glasgow Corporation.

# Universities and Colleges

## UNIVERSITY OF CAMBRIDGE

*Postgraduate Courses for Ex-Service M.O.s*

It is proposed to hold 14-day refresher courses for medical officers released from the Forces as follows: Pulmonary tuberculosis, its differential diagnosis and treatment, at Addenbrooke's Hospital, Cambridge, and at Papworth, beginning on Jan. 14, 1946; general 14-day course at Ipswich and Colchester beginning on Feb. 11, 1946; and a 14-day course on social and industrial medicine at Luton beginning on May 6, 1946. Should vacancies occur these courses will be available for general practitioners. Further particulars can be obtained on application to Dr. Douglas Firth, Trinity Hall, Cambridge.

## UNIVERSITY OF LONDON

Alan Moncrieff, M.D., F.R.C.P., has been appointed to the Nuffield Chair of Child Health tenable at the Institute of Child Health as from Jan. 1, 1946. He is a member of the staff of Middlesex Hospital and the Hospital for Sick Children and is also paediatrician to Queen Charlotte's Maternity Hospital and to the British Postgraduate Medical School. During the war he has served as whole-time physician to the Emergency Medical Service.

## UNIVERSITY OF DUBLIN

SCHOOL OF PHYSIC, TRINITY COLLEGE

The following medical degrees were conferred on Dec. 5:

M.D.—P. Delap.
M.CH.—W. Houston.
M.B., B.CH., B.A.O.—P. G. S. Beckett, J. A. D. Bradfield, K. Campbell, D. J. Crowley, W. G. Fegan, A. J. E. FitzGerald, Maire C. FitzPatrick, Joan M. Fox, T. H. F. Gillespie, H. T. C. Hitchcock, P. G. Kennedy, Elizabeth M. Kyle, Elinor W. McCloy, K. A. McFadden, C. W. E. Murphy, G. M. O'Donnell, A. J. H. Reford, Mary A. Wright.

# Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology, Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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## ANY QUESTIONS?

### Road Accidents while "Under the Influence"

**Q.**—*In charges of being "under the influence of alcohol while driving a car" the defence is often put up that the defendant's condition was due to shock or concussion. Can you help in the differential diagnosis?*

**A.**—Shock and concussion closely simulate the manifestations of alcoholic intoxication. The issue is liable to be complicated by the defendant having been given an alcoholic stimulant after the accident or by the ingestion of a small quantity of alcohol beforehand, which in itself would not warrant the charge of being "under the influence." The chemical examination of the blood or of the urine for alcohol is of definite value in these cases because the approximate amount of alcohol in the body, and therefore the amount ingested, can readily be determined. For the full value of such a procedure the reader is referred to the *Practitioner*, April, 1945, p. 205.

### Salivation

**Q.**—*A man aged 50, subject to asthma, suffers from troublesome salivation. When he is trying to sleep saliva often gets into his larynx, causing fits of coughing; when asleep saliva occasionally trickles from his lips. He also complains of intestinal flatulence. What is the treatment?*

**A.**—The causes of salivation are many, though asthma does not appear to be numbered among them. The possibility should nevertheless be borne in mind that a drug used for the treatment of the asthma, such as iodide or arsenic, is irritating the salivary glands. Salivation is usually the result of some local or distal source of irritation. Water-brash is a well-recognized symptom of peptic ulcer, and this would be one's first thought in a case of this kind. However, quite minor digestive upsets will provoke attacks of salivation, which can then be regarded as part of the syndrome of nausea. Patients may salivate after aspirin or after taking rich food and drink. It might therefore be worth while to investigate the digestive symptoms more closely, and if no gross lesion is found an effort should be made to relieve the flatulence by avoidance of potatoes and gassy vegetables. Other common causes are irritation from teeth or dentures and disease of the central nervous system. It is stated that salivation may occur as a functional form of mouth neurosis, whatever that may mean, and there is no doubt that in certain cases the cause remains obscure. If no cause can be found, belladonna or atropine should be prescribed.

### Discharge Swabs in Diphtheria

**Q.**—*With regard to discharge swabs of diphtheria cases (JOURNAL, Nov. 24, p. 753), would one be justified in abolishing these altogether provided the child was clinically well and had a normal nasopharynx?*

**A.**—No, this is not sound practice either administratively or clinically. It is quite true that a child with a normal nasopharynx is unlikely to be either a heavy or a persistent diphtheria carrier. Still, normality in the nasopharynx is an unstable condition, and a child who contracted a respiratory infection soon after discharge from hospital could be converted thereby from a light diphtheria carrier to a potentially dangerous source of infection with a heavily infected droplet spray.

### Control of Neurosyphilis

**Q.**—*When the clinical advancement of neurosyphilis has been checked, after full courses of treatment three years ago, do strongly positive Wassermann and Kahn tests indicate that antisyphilitic treatment should be tried again?*

**A.**—If the Wassermann and Kahn were *serum* tests the answer is No. As to whether further treatment is necessary, much depends on four factors: (1) the present condition of the cerebrospinal

fluid; (2) the nature of the central nervous system involvement—early or late, meningo-vascular or parenchymatous; (3) age of the infection; and (4) the total amount and nature of the treatment given ("full courses" is a somewhat indefinite expression). Lumbar puncture should be carried out; if the fluid is normal it may be sufficient to keep the patient under observation for another two years, testing the blood serum every 3 to 6 months and the cerebro-spinal fluid yearly. A fluid which shows any abnormality is an indication for further treatment no matter what the clinical condition. Serial *quantitative* serum tests should be helpful by indicating whether the infection is advancing or receding.

### Calcium in Tuberculosis

**Q.**—*Which is the best calcium preparation to use in the treatment of tuberculosis?*

**A.**—There is no definite evidence that patients with tuberculosis suffer from deficiency of calcium or that they benefit from its administration. It is, however, a useful placebo and is entirely harmless. Calcium may be given in the form of calcium gluconate (10 gr. in 10 c.cm. of water by intravenous injection, or 30 gr. by mouth), and the addition of vitamin D aids absorption.

### Paroxysmal Auricular Fibrillation

**Q.**—*The blood pressure of a patient aged 62 has varied from 146/95 to 190/110 for some fifteen years. Five years ago he had a transient hemiplegia, which cleared up within 24 hours and has not recurred. For the last three years he has had increasingly frequent attacks of palpitation with dyspnoea, usually brought on by exercise, and lasting from a few hours to a couple of days. The attacks are incapacitating, and subside without treatment other than rest. An electrocardiogram taken during an attack showed typical auricular fibrillation with auricular rate 600 and ventricular 160. After the attacks a mitral systolic murmur can be heard, but between bouts the heart sounds are normal. Almost all attacks are preceded, sometimes two hours before, by frequency of micturition, which continues during the attack and ceases when it subsides. Is there any explanation of the syndrome?*

**A.**—This is evidently a case of paroxysmal auricular fibrillation of the "senile" type. The occurrence of such attacks, if they are sufficiently frequent to make it worth while, can sometimes be reduced by quinidine sulphate, 6 to 9 gr. daily. The frequency of micturition might serve as a warning to indicate the use of quinidine. What its association with an attack may be is quite obscure. Perhaps there is a nervous cause for both. Any attack lasting more than an hour or so, if the heart rate reaches as high as 160, with the possibility of its lasting some days, is worth treating with quinidine or digitalis—preferably digoxin intravenously.

### Synthalin in Diabetes

**Q.**—*Some of my diabetic patients object to frequent injections of insulin. Can synthalin tablets be recommended to these patients? Are they as efficacious as insulin? Have they any injurious effects on the liver?*

**A.**—Synthalin was tried in the treatment of diabetes mellitus seventeen years ago (*Proc. roy. Soc. Med.*, 1928, **21**, 527, and *Quart. J. Med.*, 1928, **21**, 509). It lowers the blood sugar of many diabetic patients, and can replace from 10 to 30 units of insulin, but has no effect at all on others. Unfortunately synthalin may cause toxic symptoms, such as nausea, vomiting, and even jaundice, which may be fatal. To reduce this risk it was given in courses of three days with one day's rest, and so on. In spite of these precautions toxic symptoms developed, and its use hardly seems justified nowadays. The discovery of the slow-acting insulins—protamine-zinc and globin insulins—has made it possible to control the diabetic condition reasonably well with one dose a day. This should not be an intolerable burden for patients once they realize the benefit they receive.

### Blood Tests for Non-paternity

**Q.**—*What is the present-day opinion on tests for paternity? A male patient of mine has been accused, and is willing to undergo any tests to prove his innocence.*

**A.**—Blood tests for non-paternity, as it is more correct to call them, are regarded by most courts nowadays as reliable if performed by a competent person. They consist in the determination of the inheritable blood characters of the mother, the child, and the suspected father. Several sets of inheritable characters are now recognized. Broadly speaking, if the child's blood contains a group character which does not appear in the blood of the mother he must have inherited it from his father, and so if the suspect's blood does not contain it either, the suspect is not the father. The suspect's chances of being exonerated by blood-group tests vary according to the rarity of the child's aggregate of characters, but the average is a good enough chance to be worth trying. If the mother is willing to co-operate, the parties should write to the Director of the Department of Chemical Pathology, St. Mary's Hospital, London, W.2.

### Willow Contact Dermatitis?

**Q.**—*Has the willow tree (Salix alba coerulea) any allergic property? A man who has been measuring a large number of them—almost embracing them and perhaps touching them with his face—has developed an oedematous condition of the face, neck, and back of the right hand, which has become slightly scaly with some "weeping" at the back of the neck. He has no constitutional symptoms.*

**A.**—A large number of plants and woods are reputed to cause contact dermatitis, but it would seem that the willow has not been specially mentioned in this connexion. The story, while suspicious, is by no means convincing. A patch test with wet sawdust should give a reaction if specific sensitivity exists. Patch-testing is valueless and even misleading unless carried out in the approved manner and with suitable controls.

### Immediate Reaction to Revaccination

**Q.**—*Some authorities maintain that the immediate reaction to revaccination is an allergic phenomenon, because it can be obtained with killed virus, while others consider that it denotes a high degree of resistance. Has this point been settled by estimating the antibody content of the serum of those persons giving the immediate reaction to revaccination?*

**A.**—There is no necessary antithesis between these two ideas. The immediate reaction is commonly regarded as allergic for the reason given, but some degree of immunity is necessary for its production. Clinical evidence suggests, however, that the degree necessary is partial rather than "high." We know of no observation on the antibody content of the blood in such subjects.

### Repeated Neonatal Deaths

**Q.**—*Can you explain a case of repeated neonatal deaths? The wife of an Indian official has had eight children. Two of them survived and the other six all died within a few hours of birth. They were all a little short of full term, but apparently perfectly healthy. Both parents have had Wassermann and Kahn tests done repeatedly. There were no necropsies, but I cannot imagine any congenital defect incompatible with life which would be repeated in six children. There is no history of malaria and the woman herself is healthy.*

**A.**—The history of repeated neonatal deaths without evidence of syphilis or other obvious disease suggests that iso-immunization in pregnancy may be the cause of the disasters, Rh incompatibility being the likeliest basis, with the father Rh-positive and the mother Rh-negative.

When the foetuses reach almost full term but die within a few hours of birth, evidence of haemolytic disease may be detectable only by post-mortem examination; commencing jaundice and petechial haemorrhages may easily escape recognition in dark-skinned infants. The writer does not state whether the two surviving children are the first and second infants, as is usual in haemolytic disease, but if so the six successive disasters suggest that the father is homozygous Rh-positive—RhRh—and if that is so all subsequent children will be affected since all will be Rh-positive. If, however, the two surviving children have been interspersed with those dying soon after birth, either the cause is not iso-immunization or the father must be heterozygous Rh-positive—Rhrh—with the probability that at least the younger child is Rh-negative. In this case there would be a 50% chance of each future child escaping haemolytic disease through being Rh-negative. It is unlikely that the case could be satisfactorily investigated in Kenya, but perhaps the blood of the parents could be examined in South Africa. It should be possible, however, to send specimens of whole blood by air to this country and the bloods could be typed at one of the Regional Blood Transfusion Centres. If the questioner were sufficiently practised in blood grouping he might be able to detect Rh sensitization in the mother by the open slide test of Diamond and Abelsom (*J. Lab. clin. Med.*, 1945, **30**, 668), testing the wife's blood against the husband's if the ABO groups permit.

## INCOME TAX

### Military Pay for Period of Return Voyage

"MAJOR" served over-seas from March 11, 1937, to June 26, 1943, being paid by the Indian Government and suffering Indian income tax. The period March 23, 1943, to June 26, 1943, was spent in travelling back to this country, and for that period pay was due at British rates by the British Government. Is British tax due on the pay for that period?

*** The pay for the three months in question is apparently within the scope of Schedule E of the British income-tax code, which applies to "every public office or employment of profit and in respect of every annuity, pension, or stipend payable by the Crown or out of the public revenues of the United Kingdom." The fact that "Major" was not liable on the pay issued from Indian sources for an earlier period of foreign service does not affect his subsequent liability.

# LETTERS, NOTES, ETC.

### Problem for Bibliophils

Lieut.-Gen. Sir W. P. MACARTHUR writes: I shall be grateful if any reader can help me by identifying a book from the following scanty details. It deals in part with plague in the past, and the illustrations include one of an ancient Roman design which shows a rat identified in the text as *Rattus norvegicus*—convincingly so to my recollection. The picture might possibly be a reproduction of the rat shown on the first-century Roman altar discovered in Rheims, but my hazy recollection is that it appears on an independent medallion. The point does not affect the value of the clue. I have tried in vain to find the book in a number of libraries, which is not surprising, as I can recall neither the title nor the author's name.

### Some Suggestions and Suggestive Questions

Dr. E. W. MORGAN (London, W.11) in the course of a letter suggests that in order to avoid being confined to the restricting and restricted service of the State, which has been threatened so long, the British medical profession should join, or allow itself to be joined with, the other medical professions of the world. He goes on to show how mankind could benefit from the co-operation of medical workers among all peoples. It might, he says, even be a check against future war. Should doctors, for health or other good reasons, leave their native lands they could practise wherever they went; lack of knowledge of languages would not obstruct successful surgical manipulations, since there are enough interpreters to deal with medical history-taking. Continuing with some other suggestions, he says that every part of the British medical profession should examine itself to see where improvements are needed. Are the most suitable often enough appointed to teaching hospital staffs? Should the motives of prospective students be inquired into? Is it good that every practising doctor should be moved mostly by compassion for the sick? If so, let this be recognized, and if there are any who are not thus moved let them be guided to the laboratories, the libraries, the museums, the post-mortem rooms, etc. Is it also good for at least one or two general practitioners to serve on a hospital staff? Should hospital appointments be permanent, or should there be opportunity for change of staff if efficiency is not maintained? Is teaching of the most valuable facts, for practical purposes, sacrificed for the sake of knowledge of the whole subject, however superficial? Should the medical student's course be less intensive and exhaustive? Can anything be done to see that students find the most suitable work? He considers that some minds are built for psychological work; some arms and hands are made for orthopaedic work; some fingers are delicate enough for gynaecology; some personalities make excellent children's specialists; some all-round men make good family doctors; etc.

### Car Without Foot Pedals?

Dr. C. T. NORRIS (Calne, Wilts) writes: The vehicle Dr. J. Rammell (Sept. 29, p. 450) requires for his patient was seen by me in or about 1930 in a garage I had occasion to patronize in Battersea. Soon after I found this place I was attracted by the unusual appearance of an Austin 7 of the old "bath-tub" type, now obsolete, which appeared to have a stirrup fixed upside down on either side of the steering column below the steering wheel. Inquiry from the garage staff elicited that this car was the property of a man without legs, who, as I myself saw later, appeared to be in quite humble circumstances, and I could well believe that possession of this car made all the difference to his life. The car had been adapted to his needs by the controls from each foot pedal being led from the slots in the floor, after removal of the pedal, up the side of the steering column casing to stirrup-shaped grips, where the fingers of each hand could grasp them while the wheel was still held by the thumbs and palms: thus the stirrup-shaped grip operated the clutch or the foot-brake. If I remember rightly, in order to avoid undue downward pressure on the steering wheel, and to enable one control to be operated firmly while the other hand steered, the movable grip was placed below, and fitting into, a fixed stirrup-shaped fitting; each fitting, therefore, looked like a stirrup with a bar across the opening. In order to enable the gear lever to be used with the clutch out I believe the controls were crossed, the right hand thus operating the clutch and the left the foot-brake. The throttle was operated by a separate lever, such as at that time was often seen on cars for adjustment of the mixture. I seem to remember that the Austin 7 had two such little levers on the wheel—one to adjust the spark and the other the throttle opening—so no special fitting was necessary for that work. But in a similar adaptation of a car to-day no doubt a lever of this kind would be necessary, and could be led up the steering column to below the wheel, or put, like a motor-cycle control, on a cable on one of the fixed stirrup grips. I have gone into the description of this car in some detail as it exactly answered the requirements of Dr. Rammell's patient; and I would suggest his advising a similar adaptation of a suitable vehicle, which any interested garage should be able to carry out. The requirements would appear to be: (1) The car itself must be "light" with light springing on the clutch and foot-brake, otherwise the much smaller force than usual available for operation of these controls will not act, with disastrous results sooner or later. (2) The actual fittings must be adjusted accurately to the hands of the individual who is to drive the car. My inquiries in 1930 elicited that there was then no police or other objection to the car I saw; and I think even in these days of driving tests no reasonable examiner would object to such controls once their use had been learned. I consider the present Austin 8 or any similar car could be equally well adapted in the manner I have tried to describe.

### Undervalued Emoluments

"BEARING UP" writes: The position of the hospital M.O. who can, and does, live out must often be uncomfortable if not positively desperate. Before I married I enjoyed (if such a word can be used in this connexion) the "residential emoluments" (hateful phrase!) of my hospital. When I married there was no bar to my living out provided I kept a tame telephone at my own expense, so I blithely set up house and received £150 per annum added to my salary "in lieu of emoluments." I was only mildly dashed to find that this wilted to £75 under the searing hand of the Inland Revenue, but worse was to come. I found that to provide for myself the shelter, food, fuel, light, laundry, and telephone necessary for continued existence cost me £270 per annum. Obviously very heavy inroads had to be made into my salary, otherwise I could have paid the butcher and baker and candlestick-maker only 5s. in the pound. This illustrates the total inadequacy of the living-out allowance under present conditions, and the vicious system of taxing it at full rates. Hospitals which cannot offer adequate married accommodation should certainly be pressed to raise their living-out allowances to a more reasonable figure, but a more urgent demand is that taxation on allowances should be mitigated or abolished. While the present full tax is in force no recipient of a living-out allowance is being justly treated. To live out has non-material advantages, not to be assessed at cash valuation, which offset the debit balance, but I think it unfair that one should have to pay for them so dearly.

### Pruritus and Glycosuria

"M.D." writes: Your answers to "Any Questions?" are always most interesting. In the *Journal* of Oct. 20 (p. 556) there is a question on pruritus and glycosuria, on which a note of personal experience may be of use. With most of the answer I agree, but not with the last suggestion to seek another cause. Some years ago I had renal glycosuria, and cut down starches and sugars for a year with good result but loss of weight. I did not, however, resort to insulin. I have had no sugar appreciable for several years now, but can renew my pruritus in a similar region any day by indulging a little in boiled sweets or "tray" chocolates. Ordinary starches—e.g., bread—do not bring it on. Surely it would be worth the lady's while cutting out sweets even if there is a craving. If she does this there may be no need to use insulin or restrict carbohydrate unduly.

### Salivary Gland Tumour of Upper Lip

Mr. J. F. CURR, F.R.C.S.Ed., writes: In the *Journal* of Nov. 3 (p. 605) I published a short report on a salivary gland tumour of the upper lip, the condition being fairly uncommon according to previous records. Less than a fortnight later, and on successive days, I saw two more cases, in men aged 31 and 34, the tumours being situated near the lateral end of the lip. Using a local analgesic, each tumour shelled out easily through an incision in the mucous membrane of the lip. The typical appearances of simple, mixed parotid tumour were found on histological examination, for which I wish to thank Dr. R. F. Ogilvie and Dr. W. Forbes.

### Wellcome Medical Diary, 1946

The regulations which govern the distribution of printed matter having been relaxed, Burroughs Wellcome and Co. can now issue the very limited edition of the 1946 Medical Diary free of charge. Those who have already sent remittances of 2s. may have them refunded on request. In the absence of such a request, any sum already received will be sent to the Royal Medical Benevolent Fund early in 1946, together with any further moneys received. The diary is being dispatched to all doctors who have asked for a copy. The publishers regret that few, if any, additional requests can be entertained.

### Corrections

In Sir Arthur MacNalty's Vicary Lecture on "The Renaissance and its Influence on English Medicine, Surgery, and Public Health" (Dec. 1) "Sir John Elyot" should read "Sir Thomas Elyot," on pp. 757–8.

Dr. J. N. Davidson wishes to correct an error in our issue of Dec. 8 (p. 815). Under "Modern Methods" the third sentence should have read: "Heavy nitrogen ($N^{15}$), heavy sulphur ($S^{34}$), deuterium (D), and heavy carbon ($C^{13}$) had been used in this way."